

from the chromosome via a second recombination event over the duplicated target gene sequence either completed the allelic exchange or reconstituted the wild-type genotype. Subsequent loss of the plasmid in the absence of antibiotic selection pressure resulted in an erythromycin-sensitive phenotype. In order to assess gene replacement a screening of erythromycin-sensitive colonies was performed by analysis of the target gene PCR amplicons.

FIGURE 7 reports a schematic of the IS-1 operon for each knock-out strain generated, along with the deletion position within the amino acid sequence. Most data presented here concern the COH1 deletion strains, in which the expression of each of the antigens is higher by DNA microarray analysis (data not shown) as well as detectable by FACS analysis (see FIGURE 8). The double mutant in 2603 Δ 80, Δ 104 double mutant was constructed by sequential allelic exchanges of the shown alleles.

Immunization protocol

Immune sera for FACS experiments were obtained as follows.

Groups of 4 CD-1 outbred female mice 6-7 weeks old (Charles River Laboratories, Calco Italy) were immunized with the selected GBS antigens, (20 μ g of each recombinant GBS antigen), suspended in 100 μ l of PBS. Each group received 3 doses at days 0, 21 and 35. Immunization was performed through intra-peritoneal injection of the protein with an equal volume of Complete Freund's Adjuvant (CFA) for the first dose and Incomplete Freund's Adjuvant (IFA) for the following two doses. In each immunization scheme negative and positive control groups are used. Immune response was monitored by using serum samples taken on day 0 and 49.

FACS analysis

Preparation of paraformaldehyde treated GBS cells and their FACS analysis were carried out as follows.

GBS serotype COH1 strain cells were grown in Todd Hewitt Broth (THB; Difco Laboratories, Detroit, Mich.) to OD_{600nm} = 0.5. The culture was centrifuged for 20 minutes at 5000 rpm and bacteria were washed once with PBS, resuspended in PBS containing 0.05% paraformaldehyde, and incubated for 1 hours at 37 °C and then overnight at 4°C. 50 μ l of fixed bacteria (OD₆₀₀ 0.1) were washed once with PBS, resuspended in 20 μ l of Newborn Calf Serum, (Sigma) and incubated for 20 min. at room temperature. The cells were then incubated for 1 hour at 4°C in 100 μ l of preimmune or immune sera, diluted 1:200 in dilution buffer (PBS, 20% Newborn Calf Serum, 0.1% BSA). After centrifugation and washing with 200 μ l of washing buffer (0.1% BSA in PBS), samples were incubated for 1 hour at 4°C with 50 μ l of R-Phicoerytrin conjugated F(ab)₂ goat anti-mouse IgG (Jackson ImmunoResearch Laboratories; Inc.), diluted 1:100 in dilution buffer. Cells were washed with 200 μ l of washing buffer and resuspended in 200 μ l of PBS. Samples were analysed using a FACS Calibur apparatus (Becton Dickinson, Mountain View, Calif.) and data were analyzed using the Cell Quest Software (Becton Dickinson). A shift in mean fluorescence intensity of > 75 channels compared to preimmune sera from the same mice was considered positive. This cutoff

was determined from the mean plus two standard deviations of shifts obtained with control sera raised against mock purified recombinant proteins from cultures of *E. coli* carrying the empty expression vector and included in every experiment. Artifacts due to bacterial lysis were excluded using antisera raised against 6 different known cytoplasmic proteins all of which were negative

5 FACS data on COH1 single KO mutants for GBS 104 and GBS 80 indicated that GBS 80 is required for surface localization of GBS 104.

As shown in FIGURE 8, GBS 104 is not surface exposed in the $\Delta 80$ strain (second column, bottom), but is present in the whole protein extracts (see FIGURE 10). Mean shift values suggest that GBS 104 is partially responsible for GBS 80 surface exposure (Mean shift of GBS 80 is reduced to
10 ~60% wild-type levels in $\Delta 104$), and that GBS 80 is over-expressed in the complemented strain (mean shift value ~200% wild-type level). The $\Delta 80/p$ GBS 80 strain contains the GBS 80 orf cloned in the shuttle-vector pAM401 (Wirth, R., F. Y. An, et al. (1986). J Bacteriol 165(3): 831-6). The vector alone does not alter the secretion pattern of GBS 104 (right column). FACS was performed on mid-log fixed bacteria with mouse polyclonal antibodies as indicated at left. Black peak is pre-immune
15 sera, colored peaks are sera from immunized animals.

EXAMPLE 3: Deletion of GBS 80 causes attenuation *in vivo*.

This example demonstrates that deletion of GBS 80 causes attenuation *in vivo*, suggesting that this protein contributes to bacterial virulence.

20 By using a mouse animal model, we studied the role of GBS 80 and GBS 104 in the virulence of *S. agalactiae*.

Groups of ten outbred female mice 5-6 week weeks old (Charles River Laboratories, Calco Italy) were inoculated intraperitoneally with different dilutions of the mutant strains and LD50 (lethal dose 50) were calculated according to the method of Reed and Muench [Reed, L. J. and H. Muench (1938).The American Journal of Hygiene 27(3): 493-7]. As presented in the table below the number
25 of colony forming units (cfu) counted for both the $\Delta 80$ and the $\Delta 80, \Delta 104$ double mutants is about 10 fold higher when compared to the wild type strain suggesting that inactivation of GBS 80 but not GBS 104 is responsible for an attenuation in virulence. This finding indicates that GBS 80 gene in the AI-1 might contribute to virulence.

30 Table Lethal dose 50% analysis of AI-1 mutants in the 2603 strain background. LD50s were performed by IP injection of female CD1 mice at an age of 5-6 weeks. LD50s were calculated by the method of Reed and Muench (8).

GBS strain	LD ₅₀ , cfu	Number of Experiments
Wild Type 2603	2×10^8	4
$\Delta 104$ mutant	$\sim 2 \times 10^8$	1
$\Delta 80$ mutant	2.6×10^9	3
$\Delta 80, \Delta 104$ double mutant	$\sim 2 \times 10^9$	1

EXAMPLE 4: Effect of Adhesin Island Sortase Deletions on Surface Antigen Presentation

This example demonstrates the effect of adhesin island sortase deletions on surface antigen presentation.

FACS analysis results set forth in FIGURE 9 show that a deletion in sortase SAG0648 prevented GBS 104 from reaching the surface and slightly reduced the surface exposure of GBS 80 (fourth panel; mean shift value ~60% wild-type COH1). In the double sortase knock-out strain, neither antigen was surface exposed (far right panel). Either sortase alone was sufficient for GBS 80 to arrive at the bacterial surface (third and fourth columns, top). No effect was seen on surface exposure of antigens GBS 80 or GBS 104 in the Δ GBS 52 strain. Antibodies derived from purified GBS 52 were either non-specific or were FACS negative for GBS 52 (data not shown). FACS analysis was performed as described above (see EXAMPLE 2).

As shown in FIGURE 10, inactivation of GBS 80 has no effect on GBS 104 expression as much as GBS 104 knock out doesn't change the total amount GBS 80 expressed. The Western blot of whole protein extracts (strains noted above lanes) probed with anti-GBS 80 antisera is shown in panel A. Arrow indicates expected size of GBS 80 (60 kDa). GBS 80 antibodies recognize a doublet, the lower band is not present in Δ GBS 80 strains. Panel B shows a Western blot of whole protein extracts probed with anti-GBS 104 antisera. Arrow indicates expected size of GBS 104 (99.4 kDa). Protein extracts were prepared from the same bacterial cultures used for FACS (FIGURES 8 and 9). In conclusion, although GBS 104 does not arrive at the surface in the Δ 80 strain by FACS (FIGURE 8, second column), it is present at approximately wild-type levels in the whole protein preps (B, second lane). Approximately 20 μ g of each protein extract was loaded per lane.

Western-blot analysis

Aliquots of total protein extract mixed with SDS loading buffer (1x: 60 mM TRIS-HCl pH 6.8, 5% w/v SDS, 10% v/v glycerol, 0.1% Bromophenol Blue, 100 mM DTT) and boiled 5 minutes at 95° C, were loaded on a 12.5% SDS-PAGE precast gel (Biorad). The gel is run using a SDS-PAGE running buffer containing 250 mM TRIS, 2.5 mM Glycine and 0.1 %SDS. The gel is electroblotted onto nitrocellulose membrane at 200 mA for 60 minutes. The membrane is blocked for 60 minutes with PBS/0.05 % Tween-20 (Sigma), 10% skimmed milk powder and incubated O/N at 4° C with PBS/0.05 % Tween 20, 1% skimmed milk powder, with the appropriate dilution of the sera. After washing twice with PBS/0.05 % Tween, the membrane is incubated for 2 hours with peroxidase-conjugated secondary anti-mouse antibody (Amersham) diluted 1:4000. The nitrocellulose is washed three times for 10 minutes with PBS/0.05 % Tween and once with PBS and thereafter developed by Opti-4CN Substrate Kit (Biorad).

Example 5: Binding of Adhesin Island proteins to epithelial cells and effect of Adhesin Island proteins on capacity of GBS to adhere to epithelial cells.

This example illustrates the binding of AI proteins to epithelial cells and the effect of AI proteins on the capacity of GBS to adhere to epithelial cells.

Applicants analysed whether recombinant AI surface proteins GBS 80 or GBS 104 would demonstrate binding to various epithelial cells in a FACS analysis. Applicants also analysed whether

deletion of AI surface proteins GBS 80 or GBS 104 would effect the capacity of GBS to adhere to and invade ME180 cervical epithelial cells.

As shown in Figure 28, deletion of GBS 80 sequence from GBS strain isolate 2603 (serotype V) did not affect the capacity of the mutated GBS to adhere to and invade ME180 cervical epithelial cells. Here ME180 cervical carcinoma epithelial cells were infected with wild type GBS 2603 or GBS 2603 Δ 80 isogenic mutant. After two hours of infection, non-adherent bacteria were washed off and infection prolonged for a further two hours and four hours. In invasion experiments, after each time point, was followed by a two hour antibiotic treatment. Cells were then lysed with 1% saponin and lysates plated on TSA plates. As shown in Figure 28, there was little difference between the percent invasion or percent adhesion of wild type and mutant strains up to the four hour time point.

Figure 30 repeats this experiment with both Δ 104 and Δ 80 mutants from a different strain isolate. Here, ME180 cervical carcinoma epithelial cells were infected with GBS strain isolate COH (serotype III) wild type or COH1 Δ GBS 104 or COH1 Δ 80 isogenic mutant. After one hour of infection, non-adherent bacteria were washed off and the cells were lysed with 1% saponin. The lysates were plated on TSA plates. As shown in Figure 30, while there was little difference in the percent invasion, there was a significant decrease in the percent association of the Δ 104 mutant compared to both the wild type and Δ 80 mutant.

The affect of AI surface proteins on the ability of GBS to translocate through an epithelial monolayer was also analysed. As shown in Figure 31, a GBS 80 knockout mutant strain partially loses the ability to translocate through an epithelial monolayer. Here epithelial monolayers were inoculated with wildtype or knockout mutant in the apical chamber of a transwell system for two hours and then non-adherent bacteria were washed off. Infection was prolonged for a further two and four hours. Samples were taken from the media of the basolateral side and the number of colony forming units measured. Transepithelial electrical resistance measured prior to and after infection gave comparable values, indicating the maintenance of the integrity of the monolayer. By the six hour time point, the Δ 80 mutants demonstrated a reduced percent transcytosis.

A similar experiment was conducted with GBS 104 knock out mutants. Here, as shown in Figure 22, the Δ 104 mutants also demonstrated a reduced percent transcytosis, indicating that the mutant strains translocate through an epithelial monolayer less efficiently than their isogenic wild type counterparts.

Applicants also studied the effect of AI proteins on the capacity of a GBS strain to invade J774 macrophage-like cells. Here, J774 cells were infected with GBS COH1 wild type or COH1 Δ GBS104 or COH1 Δ GBS80 isogenic mutants. After one hour of infection, non-adherent bacteria were washed off and intracellular bacteria were recovered at two, four and six hours post antibiotic treatment. At each time point, cells were lysed with 0.25% Triton X-100 and lysates plated on TSA plates. As shown in Figure 32, the Δ 104 mutant demonstrated a significantly reduced percent invasion compared to both the wild type and Δ 80 mutant.

Example 6: Hyperoligomeric structures comprising AI surface proteins GBS 80 and GBS 104.

This example illustrates hyperoligomeric structures comprising AI surface proteins GBS 80 and GBS 104. A GBS isolate COH1 (serotype III) was adapted to increase expression of GBS 80.

Figure 34 presents a regular negative stain electron micrograph of this mutant; no pilus or

hyperoligomeric structures are distinguishable on the surface of the bacteria. When the EM stain is based on anti-GBS 80 antibodies labelled with 10 or 20 nm gold particles, the presence of GBS 80 throughout the hyperoligomeric structure is clearly indicated (Figures 36, 37 and 38). EM staining against GBS 104 (anti-GBS 104 antibodies labelled with 10 nm gold particles) also reveals the presence of GBS 104 primarily on or near the surface of the bacteria or potentially associated with bacterial peptidoglycans (Figure 39). Analysis of this same strain (over-expressing GBS 80) with a combination of both anti-GBS 80 (using 20 nm gold particles) and anti-GBS 104 (using 10 nm gold particles) reveals the presence of GBS 104 on the surface and within the hyperoligomeric structures (see Figures 40 and 41).

Example 7: GBS 80 is necessary for polymer formation and GBS 104 and sortase SAG0648 are necessary for efficient pili assembly

This example demonstrates that GBS 80 is necessary for formation of polymers and that GBS 104 and sortase SAG0648 are necessary for efficient pili assembly. GBS 80 and GBS 104 polymeric assembly was systematically analyzed in Coh1 strain single knock out mutants of each of the relevant coding genes in AI-1 (GBS 80, GBS 104, GBS 52, sag0647, and sag0648). Figure 41 provides Western blots of total protein extracts (strains noted above lanes) probed with either anti-GBS 80 (left panel) sera or anti-GBS 104 sera (right panel) for each of these Coh1 and Coh1 knock out strains. (Coh1, wild type Coh1; Δ 80, Coh1 with GBS 80 knocked out; Δ 104, Coh1 with GBS 104 knocked out; Δ 52, Coh1 with GBS 52 knocked out; Δ 647, Coh1 with SAG0647 knocked out; Δ 648, Coh1 with SAG0648 knocked out; Δ 647-8, Coh1 with SAG0647 and SAG0648 knocked out; Δ 80/pGBS80, Coh1 with GBS 80 knocked out but complemented with a high copy number plasmid expressing GBS 80. Asterisks identify the monomer of GBS 80 and GBS 104.)

The smear of immunoreactive material observed in the wild type strain, along with its disappearance in Δ 80 and Δ 104 mutants, is consistent with the notion that such high molecular weight structures are composed of covalently linked (SDS-resistant) GBS 80 and GBS 104 subunits. The immunoblotting with both anti-GBS 80 (α -GBS 80) and anti-GBS 104 (α -GBS 104) revealed that deletion of sortase SAG0648 also interferes with the assembly of high molecular weight species, whereas the knock out mutant of the second sortase (SAG0647), even if somehow reduced, still maintains the ability to form polymeric structures.

Total extracts from GBS were prepared as follows. Bacteria were grown in 50 ml of Todd-Hewitt broth (Difco) to an OD_{600nm} of 0.5-0.6 and successively pelleted. After two washes in PBS the pellet was resuspended and incubated 3 hours at 37°C with mutanolisin. Cells were then lysed with at

least three freezing-thawing cycles in dry ice and a 37°C bath. The lysate was then centrifuged to eliminate the cellular debris and the supernatant was quantified. Approximately 40 µg of each protein extract was separated on SDS-PAGE. The gel was then subjected to immunoblotting with mice antisera and detected with chemiluminescence.

Example 8: GBS 80 is polymerized by an AI-2 sortase

This example illustrates that GBS 80 can be polymerized not only by AI-1 sortases, but also by AI-2 sortases. Figure 42 shows total cell extract immunoblots of GBS 515 strain, which lacks AI-1. The left panel, where an anti-GBS 67 sera was used, shows that GBS 67 from AI-2 is assembled into high-molecular weight-complexes, suggesting the formation of a second type of pilus. The same high molecular structure is observed when GBS 80 is highly expressed by reintroducing the gene within a plasmid (pGBS 80). By using anti-GBS 80 (right panel) sera on the same extracts, again it is observed that, with GBS 80 over expression (515/pGBS 80), a high-molecular weight structure is assembled. This implies that, in the absence of AI-1 sortases, AI-2 sortases (SAG1405 and SAG1406) can complement the lacking function, still being able to assemble GBS 80 in a pilus structure.

Example 9: Coh1 produces a high molecular weight molecule, the GBS 80 pilin

This example illustrates that Coh1 produces a high molecular weight molecule, greater than 1000 kDa, which is the GBS 80 pilin. Figure 43 provides silver-stained electrophoretic gels that show that Coh1 produces two macromolecules. One of these macromolecules disappears in the Coh1 GBS 80 knock out cells, but does not disappear in the Coh1 GBS 52 knock out mutant cells. The last two lanes on the right were loaded with 15 times the amount loaded in the other lanes. This was done in order to be able to count the bands. By doing this, a conservative size estimate of the top bands was calculated by starting at 240 kDa and considering each of 14 higher bands as the result of consecutive additions of a GBS 80 monomer.

Coh1, wild type Coh1; Δ80, Coh1 cells with GBS 80 knocked out; Δ52, Coh1 cells with GBS 52 knocked out; Δ80/pGBS 80, Coh1 cells with GBS 80 knocked out and complemented with a high copy number construct expressing GBS 80.

Example 10. GBS 52 is a minor component of the GBS pilus

This example illustrates that GBS 52 is present in the GBS pilus and is a minor component of the pilus. Figure 45 shows an immunoblot of total cell extracts from a GBS Coh1 strain and a GBS Coh1 strain knocked out for GBS 52 (Δ52). The total cell extracts were immunoblotted anti-GBS 80 antisera (left) and anti-GBS 52 antisera (right). Immunoblotting was performed using a 3-8% Tris-acetate polyacrylamide gel (Invitrogen) which provided excellent separation of large molecular weight proteins (see figure 41). When the gel was incubated with anti-GBS 80 sera, the bands from the Coh1 wild-type strain appeared shifted when compared to the Δ52 mutant. This observation

indicated a different size of the pilus polymeric components in the two strains. When the same gel was stripped and incubated with anti-GBS 52 sera the high-molecular subunits in the Coh1 wild-type strain showed similar molecular size of those in the correspondent lane in the left panel. These findings confirmed that GBS 52 is indeed associated with GBS 80 macro-molecular structures but represents a minor component of the GBS pilus.

Example 11: Pilus structures are present in the supernatant of GBS bacterial cultures

This example illustrates that the pilus structure assembled in Coh1 GBS is present in the supernatant of a bacterial cell culture. Figure 46 shows an immunoblot where the protein extract of the supernatant from cultures of different GBS mutant strains (117 = Coh1 GBS 80 knockout; 159 = Coh1 GBS 104 knockout; 202 = Coh1 GBS 52 knockout; 206 = Coh1 GBS sag0647 knockout; 208 = Coh1 GBS sag0648 knockout; 197 = Coh1 GBS sag0647/sag0648 knockout; 179 = Coh1 GBS 80 knockout complemented with a high copy plasmid expressing GBS 80). GBS 80 antisera detects the presence of pilus structures in the appropriate Coh1 strains.

The protein extract was prepared as follows. Bacteria were grown in THB to an OD_{600nm} of 0.5-0.6 and the supernatant was separated from the cells by centrifugation. The supernatant was then filtered (\varnothing 0.2 μm) and 1 ml was added with 60% TCA for protein precipitation. GBS pili were also extracted from the fraction of surface-exposed proteins in Coh1 strain and its GBS 80 knock out mutant as described hereafter. Bacteria were grown to an OD_{600nm} of 0.6 in 50 ml of THB at 37°C. Cells were washed once with PBS and the pellet was then resuspended in 0.1 M KPO4 pH 6.2, 40% sucrose, 10 mM MgCl₂, 400U/ml mutanolysin and incubated 3 hours at 37°C. Protoplasts were separated by centrifugation and the supernatant was recovered and its protein content measured.

In order to study the dynamics of pilus production during different growth phases, 1 ml supernatant of a culture at different OD_{600nm} was TCA precipitated and loaded onto a 3-8% SDS-PAGE as described before. Figure 47 shows the corresponding Western blot with GBS 80 anti-sera. The first group of lanes (left five sample lanes) refer to a Coh1 strain growth (OD_{600nm} are noted above the lanes) whereas the second group of lanes (right five samples) are from a GBS 80 knock out strain over expressing GBS 80. The experiment shows that pilus macromolecular structures can be found in the supernatant in all of the growth phases tested.

Example 12: In GBS strain Coh1, only GBS 80 and a sortase (sag0647 or sag0648) is required for polymerization

This example describes requirements for pilus formation in Coh1. Figure 48 shows a Western blot of total protein extracts (prepared as described before) using anti-GBS 80 sera on Coh1 clones. (Coh1, wild type Coh1; Δ 104, Coh1 knocked out for GBS 104, Δ 647, Coh1 knocked out for sag0647, Δ 648, Coh1 knocked for sag0648, Δ 647-8, Coh1 knocked out for sag0647 and sag0648; 515, wild

type bacterial strain 515, which lacks an AI-1; p80 a high copy number plasmid which expresses GBS 80.) The data show that only the double sortase mutant is unable to polymerize GBS 80 indicating that the 'conditio sine qua non' for pilus polymerization is the co-existence of GBS 80 with at least one sortase. This result leads to a reasonable assumption that SAG1405 and SAG1406 are responsible for polymerization in this strain.

Example 13: GBS 80 can be expressed in *L. lactis* under its own promoter and terminator sequences

This example demonstrates that *L. lactis*, a non-pathogenic bacterium, can express GBS AI polypeptides such as GBS 80. *L. lactis* M1363 (*J. Bacteriol.* 154 (1983):1-9) was transformed with a construct encoding GBS 80. Briefly, the construct was prepared by cloning a DNA fragment containing the gene coding for GBS 80 under its own promoter and terminator sequences into plasmid pAM401 (a shuttle vector for *E. coli* and other Gram positive bacteria; *J. Bacteriol.* 163 (1986):831-836). Total extracts of the transformed bacteria in log phase were separated on SDS-PAGE, transferred to membranes, and incubated with antiserum against GBS 80. A polypeptide corresponding to the molecular weight of GBS 80 was detected in the lanes containing total extracts of *L. lactis* transformed with the GBS 80 construct. See Figures 133A and 133B, lanes 6 and 7. This same polypeptide was not detected in the lane containing total extracts of *L. lactis* not transformed with the GBS 80 construct, lane 9. This example shows that *L. lactis* can express GBS 80 under its own promoter and terminator.

Example 14: *L. lactis* modified to express GBS AI-1 under the GBS 80 promoter and terminator sequences expresses GBS 80 in polymeric structures

This example demonstrates the ability of *L. lactis* to express GBS AI-1 polypeptides and to incorporate at least some of the polypeptides into oligomers. *L. lactis* was transformed with a construct containing the genes encoding GBS AI-1 polypeptides. Briefly, the construct was prepared by cloning a DNA fragment containing the genes for GBS 80, GBS 52, SAG0647, SAG0648, and GBS 104 under the GBS 80 promoter and terminator sequences into construct pAM401. The construct was transformed into *L. lactis* M1363. Total extracts of log phase transformed bacteria were separated on reducing SDS-PAGE, transferred to membranes, and incubated with antiserum against GBS 80. A polypeptide with a molecular weight corresponding to the molecular weight of GBS 80 was detected in the lanes containing *L. lactis* transformed with the GBS AI-1 encoding construct. See Figure 134, lane 2. In addition, the same lane also showed immunoreactivity of polypeptides having higher molecular weights than the polypeptide having the molecular weight of GBS 80. These higher molecular weight polypeptides are likely oligomers of GBS 80. Oligomers of similar molecular

weights were also observed on a Western blot of the culture supernatant of the transformed *L. lactis*. See lane 4 of Figure 135. Thus, this example shows that *L. lactis* transformed to express GBS AI-1 can efficiently polymerize GBS 80 in the form of a pilus. This pilus structure can likely be purified from either the cell culture supernatant or cell extracts.

5

Example 15: Cloning and Expression of *S. pneumoniae* Sp0462

This example describes the production of a clone encoding a Sp0462 polypeptide and expression of the clone. To produce a clone encoding Sp0462, the open reading frame encoding Sp0462 was amplified using primers that annealed within the full-length Sp0462 open reading frame sequence. Figure 150A provides a 893 amino acid sequence of Sp0462. The primers used to produce a clone encoding the Sp0462 polypeptide are shown in Figure 150B. These primers annealed to the nucleotide sequences encoding the amino acid residues indicated by underlining in Figure 150A. Amplification of the open reading frame encoding Sp0462 using these primers produced the amplicon shown at lane 2 of the agarose gel provided in Figure 160. The Sp0462 clone encodes amino acid residues 38-862 of the 893 amino acid residue Sp0462 protein; the italicized residues in Figure 150A were eliminated. Figure 151A provides a schematic depiction of the recombinant Sp0462 polypeptide. Figure 151B shows a schematic depiction of the full-length Sp0462 polypeptide. Both the recombinant Sp0462 encoded by the clone and the full-length Sp0462 protein have two collagen binding protein type B (Cna B) domains and a von Hillebrand factor A (vWA) domain. The cloned recombinant Sp0462 lacks the LPXTG motif present in the full-length Sp0462 protein. Western blot analysis for expression of the Sp0462 clone did not result in detection of polypeptides with serum obtained from *S. pneumoniae*-infected patients (Figure 152A) or GBS 80 antiserum (Figure 152B).

Example 16: Cloning and Expression of *S. pneumoniae* Sp0463

This example describes the production of a clone encoding a Sp0463 polypeptide and detection of recombinant Sp0463 polypeptide expressed from the clone. To produce a clone encoding Sp0463, the open reading frame encoding Sp0463 was amplified using primers that annealed within the full-length Sp0463 open reading frame sequence. Figure 153A provides a 665 amino acid sequence of Sp0463. The primers used to produce the clone encoding Sp0463 polypeptide are shown in Figure 153B. These primers annealed to the nucleotide sequences encoding the amino acid residues indicated by underlining in Figure 153A. Amplification of the open reading frame encoding Sp0463 using these primers produced the amplicon shown at lane 3 of the agarose gel provided in Figure 160. The Sp0463 clone encodes amino acid residues 23-627 of the 665 amino acid residue Sp0463 protein; the italicized residues in Figure 153A were eliminated. Figure 154A provides a schematic depiction of the recombinant Sp0463 polypeptide. Figure 154B shows a schematic depiction of the full-length Sp0463 polypeptide. Both the recombinant Sp0463 encoded by the clone and the full-length Sp0463 protein have a Cna B domain and an E box motif. The cloned recombinant

Sp0463 lacks the LPXTG motif present in the full-length Sp0463 protein. Expression of the Sp0463 clone resulted in the detection of a 60 kD polypeptide, the expected molecular weight of the recombinant Sp0463 polypeptide, by Western blot analysis. See Figure 155.

5 Example 17: Cloning and Expression of *S. pneumoniae* Sp0464

This example describes the production of a clone encoding a Sp0464 polypeptide and detection of recombinant Sp0464 polypeptide expressed from the clone. To produce a clone encoding Sp0464, the open reading frame encoding Sp0464 was amplified using primers that annealed either within the full-length Sp0464 open reading frame sequence. Figure 157A provides a 393 amino acid
 10 sequence of Sp0464. The primers used to produce a clone encoding the Sp0464 polypeptide are shown in Figure 157B. These primers annealed to the nucleotide sequences encoding the amino acid residues indicated by underlining in Figure 157A. Amplification of the open reading frame encoding Sp0464 using these primers produced the amplicon shown at lane 4 of the agarose gel provided in Figure 160. The Sp0464 clone encodes amino acid residues 19-356 of the 393 amino acid residue
 15 Sp0464 protein; the italicized residues in Figure 157A were eliminated. Figure 158A provides a schematic depiction of the recombinant Sp0464 polypeptide. Figure 158B shows a schematic depiction of the full-length Sp0464 polypeptide. Both the recombinant Sp0464 encoded by the clone and the full-length Sp0464 protein have two Cna B domains. The cloned recombinant Sp0464 lacks the LPXTG motif present in the full-length Sp0464 protein. Expression of the Sp0464 clone resulted
 20 in the detection of a 38 kD polypeptide, the expected molecular weight of the recombinant Sp0464 polypeptide, by Western blot analysis. See Figure 159.

Example 18: Intranasal Immunization of Mice with Recombinant *L. lactis* Expressing GBS 80 and Subsequent Challenge

25 This example describes a method of intranasally immunizing mice using *L. lactis* that express GBS 80. Intranasal immunization consisted of 3 doses at days 0, 14 and 28, each dose administered in three consecutive days. Each day, groups of 3 CD-1 outbred female mice 6-7 weeks old (Charles River Laboratories, Calco Italy) were immunized intranasally with 10^9 or 10^{10} CFU of the recombinant *Lactococcus lactis* suspended in 20 μ l of PBS. In each immunization scheme negative
 30 (wild-type *L. lactis*) and positive (recombinant GBS80) control groups were used. The immune response of the dams was monitored by using serum samples taken on day 0 and 49. The female mice were bred 2-7 days after the last immunization (at approximately $t = 36 - 37$), and typically had a gestation period of 21 days. Within 48 hours of birth, the pups were challenged via I.P. with GBS in a dose approximately equal to an amount which would be sufficient to kill 90 % of immunized pups (as
 35 determined by empirical data gathered from PBS control groups). The GBS challenge dose is preferably administered in 50ml of THB medium. Preferably, the pup challenge takes place at 56 to 61 days after the first immunization. The challenge inocula were prepared starting from frozen

cultures diluted to the appropriate concentration with THB prior to use. Survival of pups was monitored for 5 days after challenge.

Example 19: Subcutaneous Immunization of Mice with Recombinant *L. lactis* Expressing GBS 80 and Subsequent Challenge

This example describes a method of subcutaneous immunization mice using *L. lactis* that express GBS 80. Subcutaneous immunization consists of 3 doses at days 0, 14 and 28. Groups of 3 CD-1 outbred female mice 6-7 weeks old (Charles River Laboratories, Calco Italy) were injected subcutaneously with 10^9 or 10^{10} CFU of the recombinant *Lactococcus lactis* suspended in 100 μ l of PBS. In each immunization scheme, negative (wild-type *L. lactis*) and positive (recombinant GBS80) control groups were used. The immune response of the dams was monitored by using serum samples taken on day 0 and 49. The female mice were bred 2-7 days after the last immunization (at approximately $t = 36 - 37$), and typically had a gestation period of 21 days. Within 48 hours of birth, the pups were challenged via I.P. with GBS in a dose approximately equal to an amount which would be sufficient to kill 90 % of immunized pups (as determined by empirical data gathered from PBS control groups). The GBS challenge dose is preferably administered in 50ml of THB medium. Preferably, the pup challenge takes place at 56 to 61 days after the first immunization. The challenge inocula were prepared starting from frozen cultures diluted to the appropriate concentration with THB prior to use. Survival of pups was monitored for 5 days after challenge.

Example 20: Immunization of Mice with GAS AI polypeptides and Subsequent Intranasal Challenge

This example describes a method of immunizing mice with GAS AI polypeptides and subsequently intranasally challenging the mice with GAS bacteria. Groups of 10 CD1 female mice aged between 6 and 7 weeks are immunized with a combination of GAS antigens of the invention GAS 15, GAS 16, and GAS 18, (15 μ g of each recombinant antigen, derived from M1 strain SF370) or *L. lactis* expressing the M1 strain SF370 adhesin island, suspended in 100 μ l of suitable solution. Each group receives 3 doses at days 0, 21 and 45. Immunization is performed through subcutaneous or intraperitoneal injection for the GAS 15, GAS 16, GAS 18 protein combination. The protein combination is administered with an equal volume of Complete Freund's Adjuvant (CFA) for the first dose and Incomplete Freund's Adjuvant (IFA) for the following two doses. Immunization is performed intranasally for the *L. lactis* expressing the M1 strain SF370 adhesin island. In each immunization scheme negative and positive control groups are used.

The negative control group for the mice immunized with the GAS 15, GAS 16, GAS 18 protein combination included mice immunized with PBS. The negative control group for the mice immunized with *L. lactis* expressing the M1 strain SF370 adhesin island, included mice immunized

with either wildtype *L. lactis* or *L. lactis* transformed with the pAM401 expression vector lacking any cloned adhesin island sequence.

The positive control groups included mice immunized with purified M1 strain SF370 M protein.

- 5 Immunized mice are then anaesthetized with Zoletil and challenged intranasally with a 25 µL suspension containing 1.2×10^6 or 1.2×10^8 CFU of ISS 3348 in THB. Animals are observed daily and checked for survival.

Example 21: Active Maternal Immunization Assay

- 10 As used herein, an Active Maternal Immunization assay refers to an *in vivo* protection assay where female mice are immunized with the test antigen composition. The female mice are then bred and their pups are challenged with a lethal dose of GBS. Serum titers of the female mice during the immunization schedule are measured as well as the survival time of the pups after challenge.

15 Mouse immunization

- Specifically, groups of 4 CD-1 outbred female mice 6-8 weeks old (Charles River Laboratories, Calco Italy) are immunized with one or more GBS antigens, (20 µg of each recombinant GBS antigen), suspended in 100 µl of PBS. Each group receives 3 doses at days 0, 21 and 35. Immunization is performed through intra-peritoneal injection of the protein with an equal volume of Complete Freund's Adjuvant (CFA) for the first dose and Incomplete Freund's Adjuvant (IFA) for the following two doses. In each immunization scheme negative and positive control groups are used.

Immune response is monitored by using serum samples taken on day 0 and 49. The sera are analyzed as pools from each group of mice.

25 Active maternal immunization

- A maternal immunization/neonatal pup challenge model of GBS infection was used to verify the protective efficacy of the antigens in mice. The mouse protection study was adapted from Rodewald et al. (Rodewald et al. J. Infect. Diseases 166, 635 (1992)). In brief, CD-1 female mice (6-8 weeks old) were immunized before breeding, as described above. The mice received 20 µg of protein per dose when immunized with a single antigen and 60 µg of protein per dose (15 µg of each antigen) when immunized with the combination of antigens. Mice were bred 2-7 days after the last immunization. Within 48 h of birth, pups were injected intraperitoneally with 50 µl of GBS culture. Challenge inocula were prepared starting from frozen cultures diluted to the appropriate concentration with THB before use. In preliminary experiments (not shown), the challenge doses per pup for each strain tested were determined to cause 90% lethality. Survival of pups was monitored for 2 days after challenge. Protection was calculated as (percentage

$$\frac{\text{percentage deadVaccine} - \text{percentage deadControl}}{\text{percentage deadControl}} \times 100$$

100. Data were evaluated for statistical significance by Fisher's exact test.

Embodiments of the Invention

The invention encompasses, but is not limited to, the embodiments enumerated below.

1. An immunogenic composition comprising a purified Group B Streptococcus (GBS) adhesin island (AI) polypeptide in oligomeric form.

2. The immunogenic composition of embodiment 1 wherein the GBS AI polypeptide is selected from a GBS AI-1.

3. The immunogenic composition of embodiment 1 wherein the GBS AI polypeptide is selected from a GBS AI-2.

1. An immunogenic composition comprising a purified Group B Streptococcus (GBS) adhesin island (AI) polypeptide in oligomeric form.

2. The immunogenic composition of embodiment 1 wherein the GBS AI polypeptide is selected from a GBS AI-1.

3. The immunogenic composition of embodiment 1 wherein the GBS AI polypeptide is selected from a GBS AI-2.

4. The immunogenic composition of any of embodiments 1-3 wherein the GBS AI polypeptide comprises a sortase substrate motif.

5. The immunogenic composition of embodiment 4 wherein the sortase substrate motif is an LPXTG motif.

6. The immunogenic composition of embodiment 5 wherein the LPXTG motif is represented by the amino acid sequence XPXTG, wherein the X at amino acid position 1 is an L, an I, or an F and the X at amino acid position 3 is any amino acid residue.

7. The immunogenic composition of any one of embodiments 1-3 wherein the GBS AI polypeptide affects the ability of GBS bacteria to adhere to epithelial cells.

8. The immunogenic composition of any one of embodiments 1-3 wherein the GBS AI polypeptide affects the ability of GBS bacteria to invade epithelial cells.

9. The immunogenic composition of any one of embodiments 1-3 wherein the GBS AI polypeptide affects the ability of GBS bacteria to translocate through an epithelial cell layer.

10. The immunogenic composition of any one of embodiments 1-3 wherein the GBS AI polypeptide is capable of associating with an epithelial cell surface.

11. The immunogenic composition of embodiment 10 wherein the associating with an epithelial cell surface is binding to the epithelial cell surface.

12. The immunogenic composition of any of embodiments 1-3 wherein the GBS AI polypeptide is a full-length GBS AI protein.

13. The immunogenic composition of any of embodiments 1-3 wherein the GBS AI polypeptide is a fragment of a full-length GBS AI protein.

14. The immunogenic composition of embodiment 13 wherein the fragment comprises at least 7 contiguous amino acid residues of the GBS AI protein.

15. The immunogenic composition of embodiment 2 wherein the GBS AI polypeptide is selected from the group consisting of GBS 80, GBS 104, GBS 52, and fragments thereof.

16. The immunogenic composition of embodiment 3 wherein the GBS AI polypeptide is selected from the group consisting of GBS 59, GBS 67, GBS 150, 01521, 01523, 01524, and fragments thereof.

17. The immunogenic composition of embodiment 15 wherein the GBS AI polypeptide is GBS 80.

18. The immunogenic composition of any of embodiments 1-3 or 15-17 wherein the oligomeric form is a hyperoligomer.

19. The immunogenic composition of any of embodiments 1-3, or 15-17 further comprising a Gram positive bacterium antigen not associated with an AI.

20. The immunogenic composition of embodiment 19 wherein the antigen is selected from the group consisting of GBS 322 and GBS 276.

21. The immunogenic composition of embodiment 20 wherein the antigen is GBS 322.

22. An immunogenic composition comprising a purified Gram positive bacteria adhesin island (AI) polypeptide in an oligomeric form.

23. The immunogenic composition of embodiment 22 wherein the Gram positive bacteria is of a genus selected from the group consisting of *Streptococcus*, *Enterococcus*, *Staphylococcus*, or *Listeria*.

24. The immunogenic composition of embodiment 23 wherein the Gram positive bacteria is of the genus *Streptococcus*.

25. The immunogenic composition of any of embodiments 22-24 wherein the Gram positive bacteria AI polypeptide comprises a sortase substrate motif.

26. The immunogenic composition of embodiment 25 wherein the sortase substrate motif is an LPXTG motif.

27. The immunogenic composition of any one of embodiments 22-24 wherein the Gram positive bacteria AI polypeptide affects the ability of Gram positive bacteria to adhere to epithelial cells.

28. The immunogenic composition of any one of embodiments 22-24 wherein the Gram positive bacteria AI polypeptide affects the ability of Gram positive bacteria to invade epithelial cells.

29. The immunogenic composition of any one of embodiments 22-24 wherein the Gram positive bacteria AI polypeptide affects the ability of Gram positive bacteria to translocate through an epithelial cell layer.

30. The immunogenic composition of any one of embodiments 22-24 wherein the Gram positive bacteria AI polypeptide is capable of associating with an epithelial cell surface.

31. The immunogenic composition of embodiment 30 wherein the associating with an epithelial cell surface is binding to the epithelial cell surface.

32. The immunogenic composition of any of embodiments 22-24 wherein the Gram positive bacteria AI polypeptide is a full-length Gram positive bacteria AI protein.

33. The immunogenic composition of any of embodiments 22-24 wherein the Gram positive bacteria AI polypeptide is a fragment of a full-length Gram positive bacteria AI protein.

34. The immunogenic composition of embodiment 33 wherein the fragment comprises at least 7 contiguous amino acid residues of the Gram positive bacteria AI protein.

35. The immunogenic composition of embodiment 24 wherein the genus *Streptococcus* bacteria is Group A *Streptococcus* (GAS) bacteria and the Gram positive bacteria AI polypeptide is a GAS AI polypeptide.

36. The immunogenic composition of embodiment 35 wherein the GAS AI polypeptide is selected from a GAS AI-1.

37. The immunogenic composition of embodiment 35 wherein the GAS AI polypeptide is selected from a GAS AI-2.

38. The immunogenic composition of embodiment 35 wherein the GAS AI polypeptide is selected from a GAS AI-3.

39. The immunogenic composition of embodiment 35 wherein the GAS AI polypeptide is selected from a GAS AI-4.

40. The immunogenic composition of any of embodiments 35-39 wherein the GAS AI polypeptide comprises a sortase substrate motif.

41. The immunogenic composition of embodiment 40 wherein the sortase substrate motif is an LPXTG motif.

42. The immunogenic composition of embodiment 41 wherein the LPXTG motif is represented by XXXXG, wherein the X at the first amino acid position is an L, a V, an E, or a Q, wherein the X at the second amino acid position is P if the X at the first amino acid position is an L, the X at the second amino acid position is a V if the X at the first amino acid position is an E or a Q, or the X at the second amino acid position is a V or a P if the X at the first amino acid position is a V, wherein the X at the third amino acid position is any amino acid residue, and wherein the X at the fourth amino acid position is a T if the X at the first amino acid position is a V, an E, or a Q, or the X at the fourth amino acid position is a T, an S, or an A if the X at the first amino acid position is an L.

43. The immunogenic composition of any one of embodiments 35-39 wherein the GAS AI polypeptide affects the ability of GAS bacteria to adhere to epithelial cells.

44. The immunogenic composition of any one of embodiments 35-39 wherein the GAS AI polypeptide affects the ability of GAS bacteria to invade epithelial cells.

45. The immunogenic composition of any one of embodiments 35-39 wherein the GAS AI polypeptide affects the ability of GAS bacteria to translocate through an epithelial cell layer.

46. The immunogenic composition of any one of embodiments 35-39 wherein the GAS AI polypeptide is capable of associating with an epithelial cell surface.

47. The immunogenic composition of embodiment 46 wherein the associating with an epithelial cell surface is binding to the epithelial cell surface.

48. The immunogenic composition of any of embodiments 35-39 wherein the GAS AI polypeptide is a full-length GAS AI protein.

49. The immunogenic composition of any of embodiments 35-39 wherein the GAS AI polypeptide is a fragment of a full-length GAS AI protein.

50. The immunogenic composition of embodiment 49 wherein the fragment comprises at least 7 contiguous amino acid residues of the GAS AI protein.

51. The immunogenic composition of embodiment 36 wherein the GAS AI-1 polypeptide is selected from the group consisting of M6_Spy0157, M6_Spy0159, M6_Spy0160, CDC SS 410_fimbrial, ISS3650_fimbrial, DSM2071_fimbrial, and fragments thereof.

52. The immunogenic composition of embodiment 37 wherein the GAS AI-2 polypeptide is selected from the group consisting of GAS15, GAS16, GAS18, and fragments thereof.

53. The immunogenic composition of embodiment 38 wherein the GAS AI-3 polypeptide is selected from the group consisting of SpyM3_0098, SpyM3_0100, SpyM3_0102, SpyM3_0104, SPs0100, SPs0102, SPs0104, SPs0106, orf78, orf80, orf82, orf84, spyM18_0126, spyM18_0128, spyM18_0130, spyM18_0132, SpyoM01000156, SpyoM01000155, SpyoM01000154, SpyoM01000153, SpyoM01000152, SpyoM01000151, SpyoM01000150, SpyoM01000149, ISS3040_fimbrial, ISS3776_fimbrial, ISS4959_fimbrial, and fragments thereof.

53. The immunogenic composition of embodiment 39 wherein the GAS AI-4 polypeptide is selected from the group consisting of 19224134, 19224135, 19224137, 19224139, 19224141, 20010296_fimbrial, 20020069_fimbrial, CDC SS 635_fimbrial, ISS4883_fimbrial, ISS4538_fimbrial, and fragments thereof.

54. The immunogenic composition of embodiment 24 wherein the *Streptococcus* bacteria is *Streptococcus pneumoniae* and the Gram positive bacteria AI polypeptide is a *S. pneumoniae* AI polypeptide.

55. The immunogenic composition of embodiment 54 wherein the *S. pneumoniae* AI polypeptide comprises a sortase substrate motif.

56. The immunogenic composition of embodiment 55 wherein the sortase substrate motif is an LPXTG motif.

57. The immunogenic composition of embodiment 54 wherein the *S. pneumoniae* AI polypeptide affects the ability of *S. pneumoniae* to adhere to epithelial cells.

58. The immunogenic composition of embodiment 54 wherein the *S. pneumoniae* AI polypeptide affects the ability of *S. pneumoniae* to invade epithelial cells.

59. The immunogenic composition of embodiment 54 wherein the *S. pneumoniae* AI polypeptide affects the ability of *S. pneumoniae* to translocate through an epithelial cell layer.

60. The immunogenic composition of embodiment 54 wherein the *S. pneumoniae* AI polypeptide is capable of associating with an epithelial cell surface.

61. The immunogenic composition of embodiment 60 wherein the associating with an epithelial cell surface is binding to the epithelial cell surface.

62. The immunogenic composition of embodiment 54 wherein the *S. pneumoniae* AI polypeptide is a full-length *S. pneumoniae* AI protein.

63. The immunogenic composition of embodiment 54 wherein the *S. pneumoniae* AI polypeptide is a fragment of a full-length *S. pneumoniae* AI protein.

64. The immunogenic composition of embodiment 63 wherein the fragment comprises at least 7 contiguous amino acid residues of the *S. pneumoniae* AI protein.

65. The immunogenic composition of embodiment 54 wherein the *S. pneumoniae* AI polypeptide is selected from the group consisting of SP0462, SP0463, SP0464, orf3_670, orf4_670, orf5_670, ORF3_14CSR, ORF4_14CSR, ORF5_14CSR, ORF3_19AH, ORF4_19AH, ORF5_19AH, ORF3_19FTW, ORF4_19FTW, ORF5_19FTW, ORF3_23FP, ORF4_23FP, ORF5_23FP, ORF3_23FTW, ORF4_23FTW, ORF5_23FTW, ORF3_6BF, ORF4_6BF, ORF5_6BF, ORF3_6BSP, ORF4_6BSP, ORF5_6BSP, ORF3_9VSP, ORF4_9VSP, ORF5_9VSP, and fragments thereof.

66. The immunogenic composition of any one of embodiments 22-24, 35-39, 51-54, or 65 wherein the oligomeric form is a hyperoligomer.

67. The immunogenic composition of any one of embodiments 22-24, 35-39, 51-54, or 65 further comprising a Gram positive bacteria antigen not associated with an AI.

68. The immunogenic composition of embodiment 67 wherein the antigen is selected from the group consisting of GBS 322 and GBS 276.

69. An immunogenic composition comprising a first and a second Group B Streptococcus (GBS) adhesin island (AI) polypeptide.

70. The immunogenic composition of embodiment 69 wherein a full-length polynucleotide sequence encoding for the first GBS AI polypeptide is not present in a GBS bacteria genome comprising a polynucleotide sequence encoding for the second GBS AI polypeptide.

71. The immunogenic composition of embodiment 69 wherein polynucleotides encoding the first and the second GBS AI polypeptide are each present in genomes of more than one GBS serotype and strain isolate.

72. The immunogenic composition of embodiment 69 wherein the first GBS AI polypeptide is encoded by a GBS AI-1.

73. The immunogenic composition of embodiment 69 wherein the first GBS AI polypeptide is encoded by a GBS AI-2.

74. The immunogenic composition of embodiment 72 wherein the second GBS AI polypeptide is encoded by a GBS AI-2.

75. The immunogenic composition of embodiment 73 wherein the second GBS AI polypeptide is encoded by a GBS AI-2.

76. The immunogenic composition of embodiment 72 wherein the second GBS AI polypeptide is encoded by a GBS AI-1.

67. The immunogenic composition of embodiment 73 wherein the second GBS AI polypeptide is encoded by a GBS AI-1.

78. The immunogenic composition of embodiment 72 wherein the first GBS AI polypeptide is selected from the group consisting of GBS 80, GBS 104, GBS 52, and fragments thereof.

79. The immunogenic composition of embodiment 73 wherein the first GBS AI polypeptide is selected from the group consisting of GBS 59, GBS 67, GBS 150, 01521, 01523, 01524, and fragments thereof.

80. The immunogenic composition of embodiment 74 or 75 wherein the second GBS AI polypeptide is selected from the group consisting of GBS 59, GBS 67, GBS 150, 01521, 01523, 01524, and fragments thereof, and wherein the first and the second GBS AI polypeptide are not the same polypeptide.

81. The immunogenic composition of embodiment 76 or 77 wherein the second GBS AI polypeptide is selected from the group consisting of GBS 80, GBS 104, GBS 52, and fragments thereof, and wherein the first and the second GBS AI polypeptide are not the same polypeptide.

82. The immunogenic composition of any one of embodiments 69-77 wherein the first GBS AI polypeptide comprises a sortase substrate motif.

83. The immunogenic composition of embodiment 82 wherein the sortase substrate motif is an LPXTG motif.

84. The immunogenic composition of embodiment 83 wherein the LPXTG motif is represented by the sequence XPXTG, wherein the X at amino acid position 1 is an L, an I, or an F and the X at amino acid position 3 is any amino acid residue.

85. The immunogenic composition of any one of embodiments 69-77 wherein the first GBS AI polypeptide affects the ability of GBS bacteria to adhere to epithelial cells.

86. The immunogenic composition of any one of embodiments 69-77 wherein the first GBS AI polypeptide affects the ability of GBS bacteria to invade epithelial cells.

87. The immunogenic composition of any one of embodiments 69-77 wherein the first GBS AI polypeptide affects the ability of GBS bacteria to translocate through an epithelial cell layer.

88. The immunogenic composition of any one of embodiments 69-77 wherein the first GBS AI polypeptide is capable of associating with an epithelial cell surface.

89. The immunogenic composition of embodiment 88 wherein the associating with an epithelial cell surface is binding to the epithelial cell surface.

90. The immunogenic composition of any of embodiments 69-77 wherein the first GBS AI polypeptide is a full-length GBS AI protein.

91. The immunogenic composition of any of embodiments 69-77 wherein the first GBS AI polypeptide is a fragment of a full-length GBS AI protein.

92. The immunogenic composition of embodiment 91 wherein the fragment comprises at least 7 contiguous amino acid residues of the first GBS AI protein.

93. The immunogenic composition of any one of embodiments 69-79 wherein the first GBS AI polypeptide is in oligomeric form.

94. The immunogenic composition of any one of embodiments 69-77 wherein the second GBS AI polypeptide is in oligomeric form.

95. The immunogenic composition of any one of embodiments 69-79 wherein the first and the second GBS AI polypeptide are associated in a single oligomeric form.

96. The immunogenic composition of embodiment 95 wherein the first and the second GBS AI polypeptides are chemically associated.

97. The immunogenic composition of embodiment 95 wherein the first and the second GBS AI polypeptides are physically associated.

98. The immunogenic composition of embodiment 93 wherein the oligomeric form is a hyperoligomer.

99. The immunogenic composition of embodiment 94 wherein the oligomeric form is a hyperoligomer.

100. The immunogenic composition of embodiment 76 wherein the first GBS AI polypeptide is GBS 80 and the second GBS AI polypeptide is GBS 104.

101. The immunogenic composition of embodiment 74 wherein the first GBS AI polypeptide is GBS 80 and the second GBS AI polypeptide is GBS 67.

102. The immunogenic composition of any one of embodiments 69-79, 100, or 101 further comprising a GBS polypeptide not associated with an AI.

103. The immunogenic composition of embodiment 102 wherein the GBS polypeptide not associated with an AI is selected from the group consisting of GBS 322 and GBS 276.

104. The immunogenic composition of embodiment 103 wherein the GBS polypeptide not associated with an AI is GBS 322.

105. An immunogenic composition comprising a first and a second Gram positive bacteria adhesin island (AI) polypeptide.

106. The immunogenic composition of embodiment 105 wherein a full length polynucleotide sequence encoding for the first Gram positive bacteria AI polypeptide is not present in a genome of a Gram positive bacteria comprising a full length polynucleotide sequence encoding for the second Gram positive bacteria AI polypeptide.

107. The immunogenic composition of embodiment 105 wherein polynucleotides encoding the first and the second Gram positive bacteria AI polypeptide are each present in genomes of more than one Gram positive bacteria serotype and strain isolate.

108. The immunogenic composition of embodiment 105 wherein the first and the second Gram positive bacteria AI polypeptides are of different Gram positive bacteria species.

109. The immunogenic composition of embodiment 105 wherein the first and the second Gram positive bacteria AI polypeptides are of the same Gram positive bacteria species.

110. The immunogenic composition of embodiment 105 wherein the first and the second Gram positive bacteria AI polypeptides are from different AI subtypes.

111. The immunogenic composition of embodiment 105 wherein the first and the second Gram positive bacteria AI polypeptides are from the same AI subtype.

112. The immunogenic composition of embodiment 105 wherein the first Gram positive bacteria AI polypeptide has detectable surface exposure on a first Gram positive bacteria strain or serotype but not a second Gram positive bacteria strain or subtype and the second Gram positive bacteria AI polypeptide has detectable surface exposure on the second Gram positive bacteria strain or serotype but not the first Gram positive bacteria strain or serotype.

113. The immunogenic composition of embodiment 105 wherein the Gram positive bacteria is *S. pneumoniae*, *S. mutans*, *E. faecalis*, *E. faecium*, *C. difficile*, *L. monocytogenes*, or *C. diphtheriae*.

114. The immunogenic composition of any of embodiments 105-113 wherein the first and the second Gram positive bacteria AI polypeptides comprise a sortase substrate motif.

115. The immunogenic composition of embodiment 114 wherein the sortase substrate motif is an LPXTG motif.

116. The immunogenic composition of embodiment 115 wherein the LPXTG motif is represented by XXXXG, wherein the X at amino acid position 1 is an L, a V, an E, an I, an F, or a Q, wherein X at amino acid position 2 is a P if X at amino acid position 1 is an L, an I, or an F, wherein X at amino acid position 2 is a V if X at amino acid position 1 is a E or a Q, wherein X at amino acid position 2 is a V or a P if X at amino acid position 1 is a V, wherein X at amino acid position 3 is any amino acid residue, wherein X at amino acid position 4 is a T if X at amino acid position 1 is a V, E, I, F, or Q, and wherein X at amino acid position 4 is a T, S, or A if X at amino acid position 1 is an L.

117. The immunogenic composition of embodiment 105 wherein the first Gram positive bacteria AI polypeptide is a first Group A Streptococcus (GAS) AI polypeptide.

118. The immunogenic composition of embodiment 117 wherein the first GAS AI polypeptide comprises a sortase substrate motif.

119. The immunogenic composition of embodiment 118 wherein the sortase substrate motif is an LPXTG motif.

120. The immunogenic composition of embodiment 119 wherein the LPXTG motif is represented by XXXXG, wherein the X at the first amino acid position is an L, a V, an E, or a Q, wherein the X at the second amino acid position is P if the X at the first amino acid position is an L, the X at the second amino acid position is a V if the X at the first amino acid position is an E or a Q, or the X at the second amino acid position is a V or a P if the X at the first amino acid position is a V, wherein the X at the third amino acid position is any amino acid residue, and wherein the X at the fourth amino acid position is a T if the X at the first amino acid position is a V, an E, or a Q, or the X at the fourth amino acid position is a T, an S, or an A if the X at the first amino acid position is an L.

121. The immunogenic composition of embodiment 117 wherein the first GAS AI polypeptide affects the ability of GAS bacteria to adhere to epithelial cells.

122. The immunogenic composition of embodiment 117 wherein the first GAS AI polypeptide affects the ability of GAS bacteria to invade epithelial cells.

123. The immunogenic composition of embodiment 117 wherein the first GAS AI polypeptide affects the ability of GAS bacteria to translocate through an epithelial cell layer.

124. The immunogenic composition of embodiment 117 wherein the first GAS AI polypeptide is capable of associating with an epithelial cell surface.

125. The immunogenic composition of embodiment 117 wherein the associating with an epithelial cell surface is binding to the epithelial cell surface.

126. The immunogenic composition of embodiment 117 wherein the first GAS AI polypeptide is a full-length GAS AI protein.

127. The immunogenic composition of embodiment 117 wherein the first GAS AI polypeptide is a fragment of a full-length GAS AI protein.

128. The immunogenic composition of embodiment 127 wherein the fragment comprises at least 7 contiguous amino acid residues of the GAS AI protein.

129. The immunogenic composition of embodiment 117 wherein the first GAS AI polypeptide is a first GAS AI-1 polypeptide.

130. The immunogenic composition of embodiment 117 wherein the first GAS AI polypeptide is a first GAS AI-2 polypeptide.

131. The immunogenic composition of embodiment 117 wherein the first GAS AI polypeptide is a first GAS AI-3 polypeptide.

132. The immunogenic composition of embodiment 117 wherein the first GAS AI polypeptide is a first GAS AI-4 polypeptide.

133. The immunogenic composition of any one of embodiments 117 or 129-132 wherein the second Gram positive bacteria AI polypeptide is a second GAS AI polypeptide.

134. The immunogenic composition of embodiment 133 wherein the second GAS AI polypeptide is a second GAS AI-1 polypeptide.

135. The immunogenic composition of embodiment 133 wherein the second GAS AI polypeptide is a second GAS AI-2 polypeptide.

136. The immunogenic composition of embodiment 133 wherein the second GAS AI polypeptide is a second GAS AI-3 polypeptide.

137. The immunogenic composition of embodiment 133 wherein the second GAS AI polypeptide is a second GAS AI-4 polypeptide.

138. The immunogenic composition of embodiment 129 wherein the first GAS AI-1 polypeptide is selected from the group consisting of M6_Spy0157, M6_Spy0159, M6_Spy0160, CDC SS 410_fimbrial, ISS3650_fimbrial, DSM2071_fimbrial, and fragments thereof.

139. The immunogenic composition of embodiment 130 wherein the first GAS AI-2 polypeptide is selected from the group consisting of GAS15, GAS16, GAS18, and fragments thereof.

140. The immunogenic composition of embodiment 131 wherein the first GAS AI-3 polypeptide is selected from the group consisting of SpyM3_0098, SpyM3_0100, SpyM3_0102, SpyM3_0104, SPs0100, SPs0102, SPs0104, SPs0106, orf78, orf80, orf82, orf84, spyM18_0126, spyM18_0128, spyM18_0130, spyM18_0132, SpyoM01000156, SpyoM01000155, SpyoM01000154, SpyoM01000153, SpyoM01000152, SpyoM01000151, SpyoM01000150, SpyoM01000149, ISS3040_fimbrial, ISS3776_fimbrial, ISS4959_fimbrial, and fragments thereof.

141. The immunogenic composition of embodiment 132 wherein the first GAS AI-4 polypeptide is selected from the group consisting of 19224134, 19224135, 19224137, 19224139, 19224141, 20010296_fimbrial, 20020069_fimbrial, CDC SS 635_fimbrial, ISS4883_fimbrial, ISS4538_fimbrial, and fragments thereof.

142. The immunogenic composition of embodiment 134 wherein the second GAS AI-1 polypeptide is selected from the group consisting of M6_Spy0157, M6_Spy0159, M6_Spy0160, CDC SS 410_fimbrial, ISS3650_fimbrial, DSM2071_fimbrial, and fragments thereof.

143. The immunogenic composition of embodiment 135 wherein the second GAS AI-2 polypeptide is selected from the group consisting of GAS15, GAS16, GAS18, and fragments thereof.

144. The immunogenic composition of embodiment 136 wherein the second GAS AI-3 polypeptide is selected from the group consisting of SpyM3_0098, SpyM3_0100, SpyM3_0102, SpyM3_0104, SPs0100, SPs0102, SPs0104, SPs0106, orf78, orf80, orf82, orf84, spyM18_0126, spyM18_0128, spyM18_0130, spyM18_0132, SpyoM01000156, SpyoM01000155, SpyoM01000154, SpyoM01000153, SpyoM01000152, SpyoM01000151, SpyoM01000150, SpyoM01000149, ISS3040_fimbrial, ISS3776_fimbrial, ISS4959_fimbrial, and fragments thereof.

145. The immunogenic composition of embodiment 137 wherein the second GAS AI-4 polypeptide is selected from the group consisting of 19224134, 19224135, 19224137, 19224139, 19224141, 20010296_fimbrial, 20020069_fimbrial, CDC SS 635_fimbrial, ISS4883_fimbrial, ISS4538_fimbrial, and fragments thereof.

146. The immunogenic composition of any one of embodiments 117-132 or 138-141 wherein the second Gram positive bacteria AI polypeptide is a Group B Streptococcus (GBS) AI polypeptide.

147. The immunogenic composition of embodiment 146 wherein the GBS AI polypeptide comprises a sortase substrate motif.

148. The immunogenic composition of embodiment 147 wherein the sortase substrate motif is an LPXTG motif.

149. The immunogenic composition of embodiment 148 wherein the LPXTG motif is represented by the amino acid sequence XPXTG, wherein the X at amino acid position 1 is an L, an I, or an F and the X at amino acid position 3 is any amino acid residue.

150. The immunogenic composition of embodiment 146 wherein the GBS AI polypeptide affects the ability of GBS bacteria to adhere to epithelial cells.

151. The immunogenic composition of embodiment 146 wherein the GBS AI polypeptide affects the ability of GBS bacteria to invade epithelial cells.

152. The immunogenic composition of embodiment 146 wherein the GBS AI polypeptide affects the ability of GBS bacteria to translocate through an epithelial cell layer.

153. The immunogenic composition of embodiment 146 wherein the GBS AI polypeptide is capable of associating with an epithelial cell surface.

5 154. The immunogenic composition of embodiment 146 wherein the associating with an epithelial cell surface is binding to the epithelial cell surface.

155. The immunogenic composition of embodiment 146 wherein the GBS AI polypeptide is a full-length GBS AI protein.

10 156. The immunogenic composition of embodiment 146 wherein the GBS AI polypeptide is a fragment of a full-length GBS AI protein.

157. The immunogenic composition of embodiment 156 wherein the fragment comprises at least 7 contiguous amino acid residues of the GBS AI protein.

158. The immunogenic composition of embodiment 146 wherein the GBS AI polypeptide is a GBS AI-1 polypeptide.

15 159. The immunogenic composition of embodiment 146 wherein the GBS AI polypeptide is a GBS AI-2 polypeptide.

160. The immunogenic composition of embodiment 158 wherein the GBS AI-1 polypeptide is selected from the group consisting of GBS 80, GBS 104, GBS 52, and fragments thereof.

20 161. The immunogenic composition of embodiment 159 wherein the GBS AI-2 polypeptide is selected from the group consisting of GBS 59, GBS 67, GBS 150, 01521, 01523, 01524, and fragments thereof.

162. The immunogenic composition of any one of embodiments 117-132 or 138-141 wherein the second Gram positive bacteria AI polypeptide is a *Streptococcus pneumoniae* AI polypeptide.

25 163. The immunogenic composition of embodiment 162 wherein the *S. pneumoniae* AI polypeptide comprises a sortase substrate motif.

164. The immunogenic composition of embodiment 163 wherein the sortase substrate motif is an LPXTG motif.

165. The immunogenic composition of embodiment 162 wherein the *S. pneumoniae* AI polypeptide affects the ability of *S. pneumoniae* to adhere to epithelial cells.

30 166. The immunogenic composition of embodiment 162 *S. pneumoniae* AI polypeptide affects the ability of *S. pneumoniae* to invade epithelial cells.

167. The immunogenic composition of embodiment 162 wherein the *S. pneumoniae* AI polypeptide affects the ability of *S. pneumoniae* to translocate through an epithelial cell layer.

35 168. The immunogenic composition of embodiment 162 wherein the *S. pneumoniae* AI polypeptide is capable of associating with an epithelial cell surface.

169. The immunogenic composition of embodiment 168 wherein the associating with an epithelial cell surface is binding to the epithelial cell surface.

170. The immunogenic composition of embodiment 162 wherein the *S. pneumoniae* AI polypeptide is a full-length *S. pneumoniae* AI protein.

171. The immunogenic composition of embodiment 162 wherein the *S. pneumoniae* AI polypeptide is a fragment of a full-length *S. pneumoniae* AI protein.

172. The immunogenic composition of embodiment 162 wherein the fragment comprises at least 7 contiguous amino acid residues of the *S. pneumoniae* AI protein.

173. The immunogenic composition of embodiment 162 wherein the *S. pneumoniae* AI polypeptide is selected from the group consisting of SP0462, SP0463, SP0464, orf3_670, orf4_670, orf5_670, ORF3_14CSR, ORF4_14CSR, ORF5_14CSR, ORF3_19AH, ORF4_19AH, ORF5_19AH, ORF3_19FTW, ORF4_19FTW, ORF5_19FTW, ORF3_23FP, ORF4_23FP, ORF5_23FP, ORF3_23FTW, ORF4_23FTW, ORF5_23FTW, ORF3_6BF, ORF4_6BF, ORF5_6BF, ORF3_6BSP, ORF4_6BSP, ORF5_6BSP, ORF3_9VSP, ORF4_9VSP, ORF5_9VSP, and fragments thereof.

174. The immunogenic composition of any one of embodiments 105-117 wherein the first Gram positive bacteria AI polypeptide is in oligomeric form.

175. The immunogenic composition of embodiment 174 wherein the oligomeric form is a hyperoligomer.

176. The immunogenic composition of embodiment 174 wherein the second Gram positive bacteria AI polypeptide is in oligomeric form.

177. The immunogenic composition of embodiment 176 wherein the oligomeric form is a hyperoligomer.

178. The immunogenic composition of embodiment 176 wherein the first and the second Gram positive bacteria AI polypeptide are associated in a single oligomeric form.

179. The immunogenic composition of embodiment 178 wherein the first and the second Gram positive bacteria AI polypeptide are chemically associated.

180. The immunogenic composition of embodiment 178 wherein the first and the second Gram positive bacteria AI polypeptide are physically associated.

181. The immunogenic composition of any one of embodiments 105-117 further comprising a Gram positive bacteria polypeptide not associated with an AI.

182. The immunogenic composition of embodiment 181 wherein the Gram positive bacteria polypeptide not associated with an AI is selected from the group consisting of GBS 322 and GBS 276.

183. The immunogenic composition of embodiment 182 wherein the Gram positive bacteria polypeptide not associated with an AI is GBS 322.

184. A modified Gram positive bacterium adapted to produce increased levels of AI surface protein.

185. The modified Gram positive bacterium of embodiment 184 wherein the AI surface protein is in oligomeric form.

186. The modified Gram positive bacterium of embodiment 185 wherein the oligomeric form is a hyperoligomer.

187. The modified Gram positive bacterium of any one of embodiments 184-186 which is a Group B Streptococcus bacterium.

188. The modified Gram positive bacterium of any one of embodiments 184-186 which is a Group A Streptococcus bacterium.

189. The modified Gram positive bacterium of any one of embodiments 184-186 which is a non-pathogenic Gram positive bacterium.

190. The modified Gram positive bacterium of embodiment 189 wherein the non-pathogenic Gram positive bacterium is *Streptococcus gordonii*.

191. The modified Gram positive bacterium of embodiment 189 wherein the non-pathogenic Gram positive bacterium is *Lactococcus lactis*.

192. The modified Gram positive bacterium of any one of embodiments 184-186 which has been inactivated and wherein the AI surface protein is exposed on the surface of the Gram positive bacterium.

193. The modified Gram positive bacterium of any one of embodiments 184-186 which has been attenuated and wherein the AI surface protein is exposed on the surface of the Gram positive bacterium.

194. The modified GBS bacterium of embodiment 187 which has been inactivated and wherein the AI surface protein is exposed on the surface of the GBS bacterium.

195. The modified GBS bacterium of embodiment 187 which has been attenuated and wherein the AI surface protein is exposed on the surface of the GBS bacterium.

196. The modified GAS bacterium of embodiment 188 which has been inactivated and wherein the AI surface protein is exposed on the surface of the GAS bacterium.

197. The modified GAS bacterium of embodiment 188 which has been attenuated and wherein the AI surface protein is exposed on the surface of the GAS bacterium.

198. The modified non-pathogenic bacterium of embodiment 189 which has been inactivated and wherein the AI surface protein is exposed on the surface of the non-pathogenic Gram positive bacterium.

199. The modified non-pathogenic bacterium of embodiment 189 which has been attenuated and wherein the AI surface protein is exposed on the surface of the non-pathogenic Gram positive bacterium.

200. A method for manufacturing an oligomeric adhesin island (AI) surface antigen comprising:

culturing a Gram positive bacterium that expresses an oligomeric AI surface antigen and isolating the expressed oligomeric AI surface antigen.

201. The method of embodiment 200 wherein the step of isolating is performed by collecting said oligomeric AI surface antigen from Gram positive bacterium secretions in the Gram positive bacterium culture.

202. The method of embodiment 200 further comprising a step of purifying.

203. The method of embodiment 202 wherein the oligomeric AI surface antigen is purified from the Gram positive bacterium cell surface.

204. The method of embodiment 200 wherein the Gram positive bacterium is adapted for increased AI protein expression.

5 205. The method of any one of embodiments 200-204 wherein the Gram positive bacterium is a Group A Streptococcus bacterium.

206. The method of any one of embodiments 200-204 wherein the Gram positive bacterium is a Group B Streptococcus bacterium.

10 207. The method of any one of embodiments 200-204 wherein the oligomeric AI surface antigen is in hyperoligomeric form.

208. The method of embodiment 200 wherein the Gram positive bacterium expresses the oligomeric AI surface antigen recombinantly.

209. The method of embodiment 208 wherein the Gram positive bacterium further manipulated expresses at least 1 AI sortase.

15 210. The modified Gram positive bacterium of any one of embodiments 184-186 which is a *S. pneumoniae* bacterium.

211. The method of any one of embodiments 200-204 wherein the Gram positive bacterium is *S. pneumoniae*.

1. An immunogenic composition comprising a purified Group B Streptococcus (GBS) adhesin island (AI) polypeptide in oligomeric form.

2. The immunogenic composition of claim 1 wherein the GBS AI polypeptide is selected from a GBS AI-1.

3. The immunogenic composition of claim 1 wherein the GBS AI polypeptide is selected from a GBS AI-2.

4. The immunogenic composition of claim 2 wherein the GBS AI polypeptide is selected from the group consisting of GBS 80, GBS 104, GBS 52, and fragments thereof.

5. The immunogenic composition of claim 3 wherein the GBS AI polypeptide is selected from the group consisting of GBS 59, GBS 67, GBS 150, 01521, 01523, 01524, and fragments thereof.

6. The immunogenic composition of claim 4 wherein the GBS AI polypeptide is GBS 80.

7. The immunogenic composition of any of claims 1-6 wherein the oligomeric form is a hyperoligomer.

8 (22). An immunogenic composition comprising a purified Gram positive bacteria adhesin island (AI) polypeptide in an oligomeric form.

9 (23). The immunogenic composition of claim 8 wherein the Gram positive bacteria is of a genus selected from the group consisting of *Streptococcus*, *Enterococcus*, *Staphylococcus*, *Clostridium*, *Corynebacterium*, or *Listeria*.

10 (24). The immunogenic composition of claim 9 wherein the Gram positive bacteria is of the genus *Streptococcus*.

11 (35). The immunogenic composition of claim 10 wherein the genus *Streptococcus* bacteria is Group A Streptococcus (GAS) bacteria and the Gram positive bacteria AI polypeptide is a GAS AI polypeptide.

12 (36). The immunogenic composition of claim 11 wherein the GAS AI polypeptide is selected from a GAS AI-1.

13 (37). The immunogenic composition of claim 11 wherein the GAS AI polypeptide is selected from a GAS AI-2.

14 (38). The immunogenic composition of claim 11 wherein the GAS AI polypeptide is selected from a GAS AI-3.

15 (39). The immunogenic composition of claim 11 wherein the GAS AI polypeptide is selected from a GAS AI-4.

16 (66). The immunogenic composition of any one of claims 8-15 wherein the oligomeric form is a hyperoligomer.

17. An immunogenic composition comprising a first and a second Group B Streptococcus (GBS) adhesin island (AI) polypeptide.

18. The immunogenic composition of claim 17 wherein the first GBS AI polypeptide is encoded by a GBS AI-1.

19. The immunogenic composition of claim 18 wherein the second GBS AI polypeptide is encoded by a GBS AI-2.

20. The immunogenic composition of claim 18 wherein the first GBS AI polypeptide is selected from the group consisting of GBS 80, GBS 104, GBS 52, and fragments thereof.

21. The immunogenic composition of claim 19 wherein the second GBS AI polypeptide is selected from the group consisting of GBS 59, GBS 67, GBS 150, 01521, 01523, 01524, and fragments thereof, and wherein the first and the second GBS AI polypeptide are not the same polypeptide.

22. The immunogenic composition of claim 19 wherein the first GBS AI polypeptide is GBS 80 and the second GBS AI polypeptide is GBS 67.

23. An immunogenic composition comprising a first and a second Gram positive bacteria adhesin island (AI) polypeptide.

24. The immunogenic composition of claim 23 wherein the Gram positive bacteria is *Streptococcus*, *Enterococcus*, *Staphylococcus*, *Clostridium*, *Corynebacterium*, or *Listeria*.

25. The immunogenic composition of claim 23 wherein the first Gram positive bacteria AI polypeptide is a first Group A *Streptococcus* (GAS) AI polypeptide.

26. The immunogenic composition of claim 25 wherein the first GAS AI polypeptide is a first GAS AI-1 polypeptide.

27. The immunogenic composition of claim 25 wherein the first GAS AI polypeptide is a first GAS AI-2 polypeptide.

28. The immunogenic composition of claim 25 wherein the first GAS AI polypeptide is a first GAS AI-3 polypeptide.

29. The immunogenic composition of claim 25 wherein the first GAS AI polypeptide is a first GAS AI-4 polypeptide.

30. The immunogenic composition of any one of claims 25-29 wherein the second Gram positive bacteria AI polypeptide is a second GAS AI polypeptide.

31. The immunogenic composition of claim 30 wherein the second GAS AI polypeptide is a second GAS AI-1 polypeptide.

32. The immunogenic composition of claim 30 wherein the second GAS AI polypeptide is a second GAS AI-2 polypeptide.

33. The immunogenic composition of claim 30 wherein the second GAS AI polypeptide is a second GAS AI-3 polypeptide.

34. The immunogenic composition of claim 30 wherein the second GAS AI polypeptide is a second GAS AI-4 polypeptide.

35. A modified Gram positive bacterium adapted to produce increased levels of AI surface protein.

36. The modified Gram positive bacterium of claim 35 wherein the AI surface protein is in oligomeric form.

37. The modified Gram positive bacterium of claim 36 wherein the oligomeric form is a hyperoligomer.

5 38. The modified Gram positive bacterium of any one of claims 35-37 which is a non-pathogenic Gram positive bacterium.

39. The modified Gram positive bacterium of claim 38 wherein the non-pathogenic Gram positive bacterium is *Lactococcus lactis*.

10 40. A method for manufacturing an oligomeric adhesin island (AI) surface antigen comprising:

culturing a Gram positive bacterium that expresses an oligomeric AI surface antigen and isolating the expressed oligomeric AI surface antigen.

PCT/US2005/027239

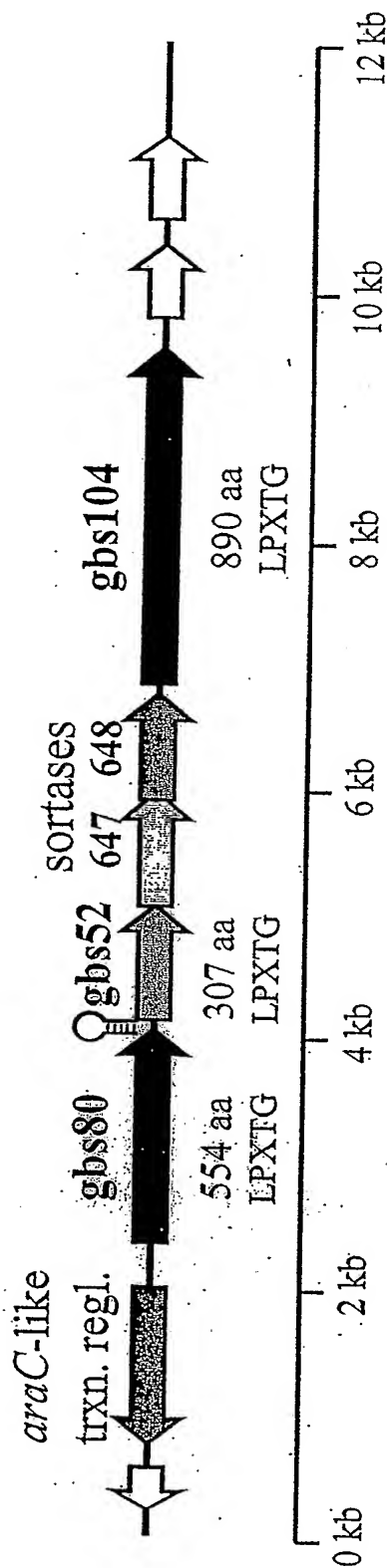
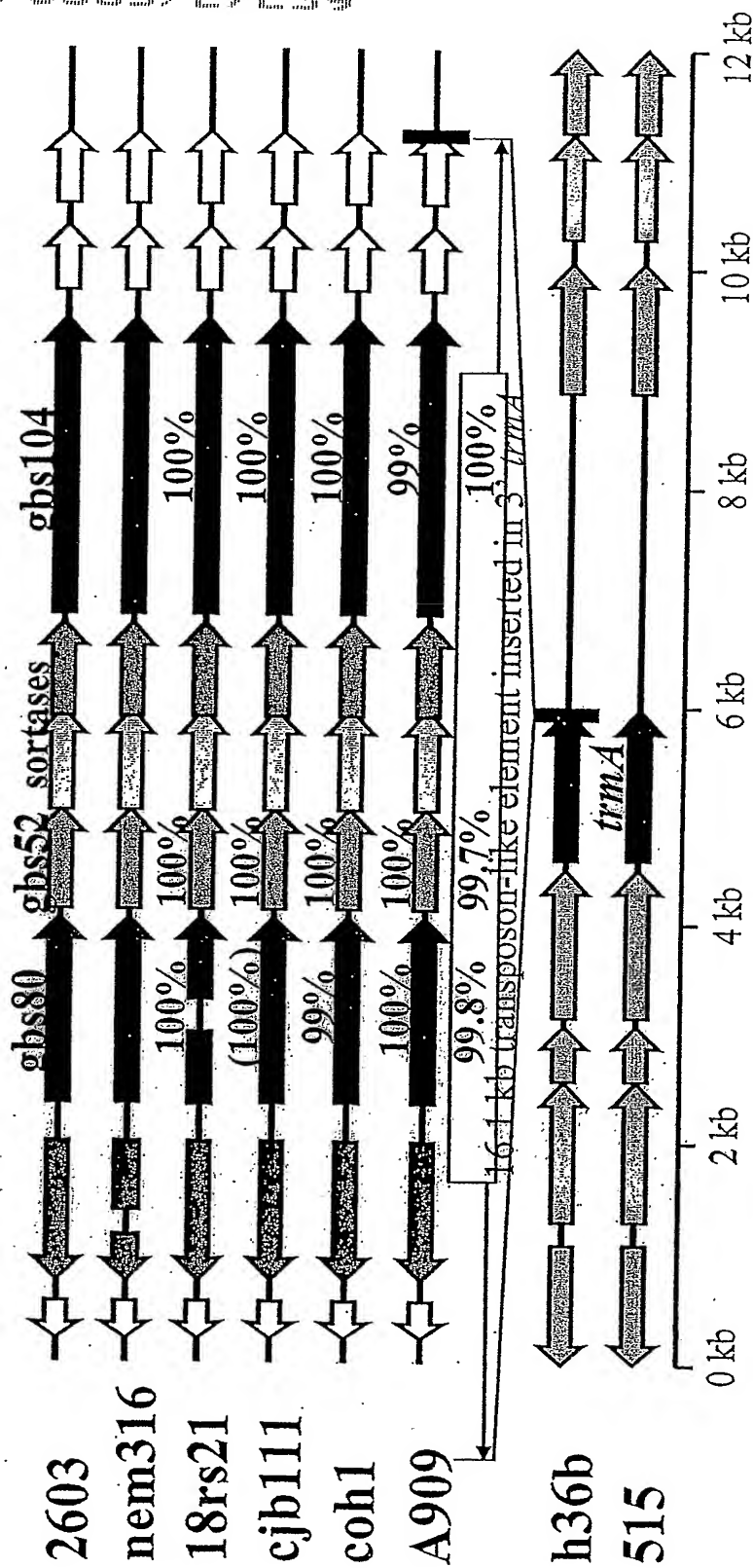
FIGURE 1: Adhesion Island 1

Figure 2: Conservation of AI-1 in GBS serotypes and strain isolates



PCT/US2005/027239

FIGURE 3: Correlation of AI-1 and AI-2 within GBS serotype V, strain isolate 2603 genome

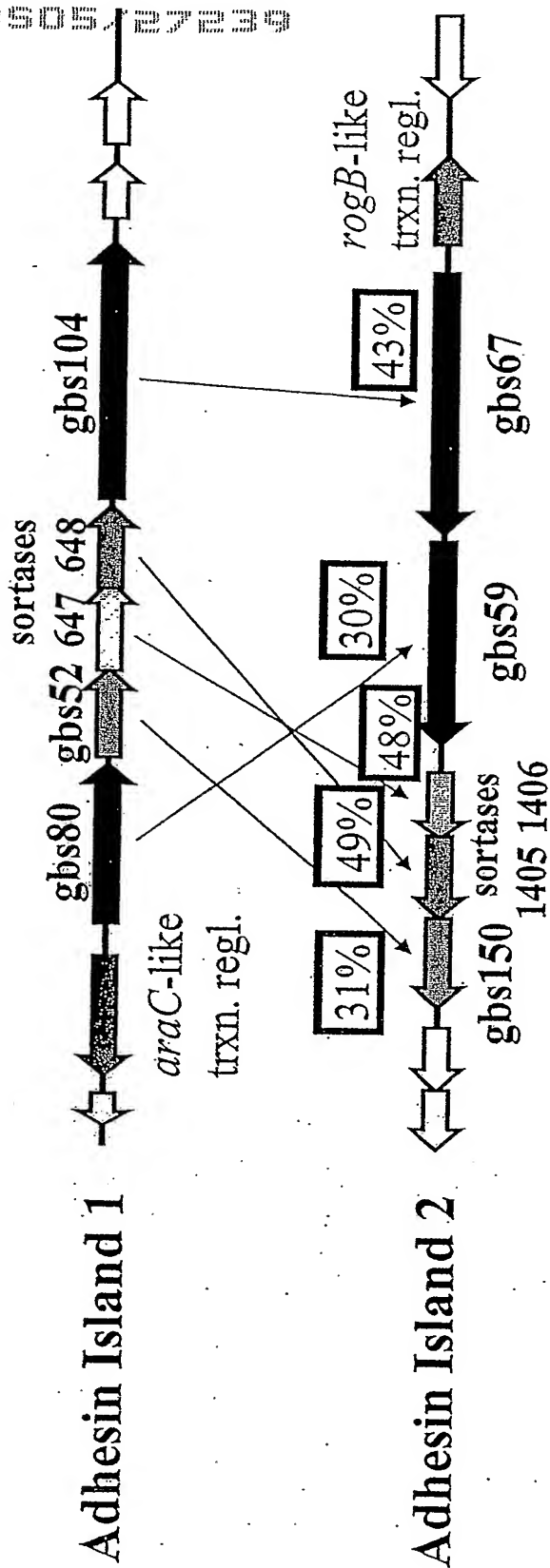


Figure 4: Identification and Variance of AI-2 in Several GBS Serotypes and Strain Isolates

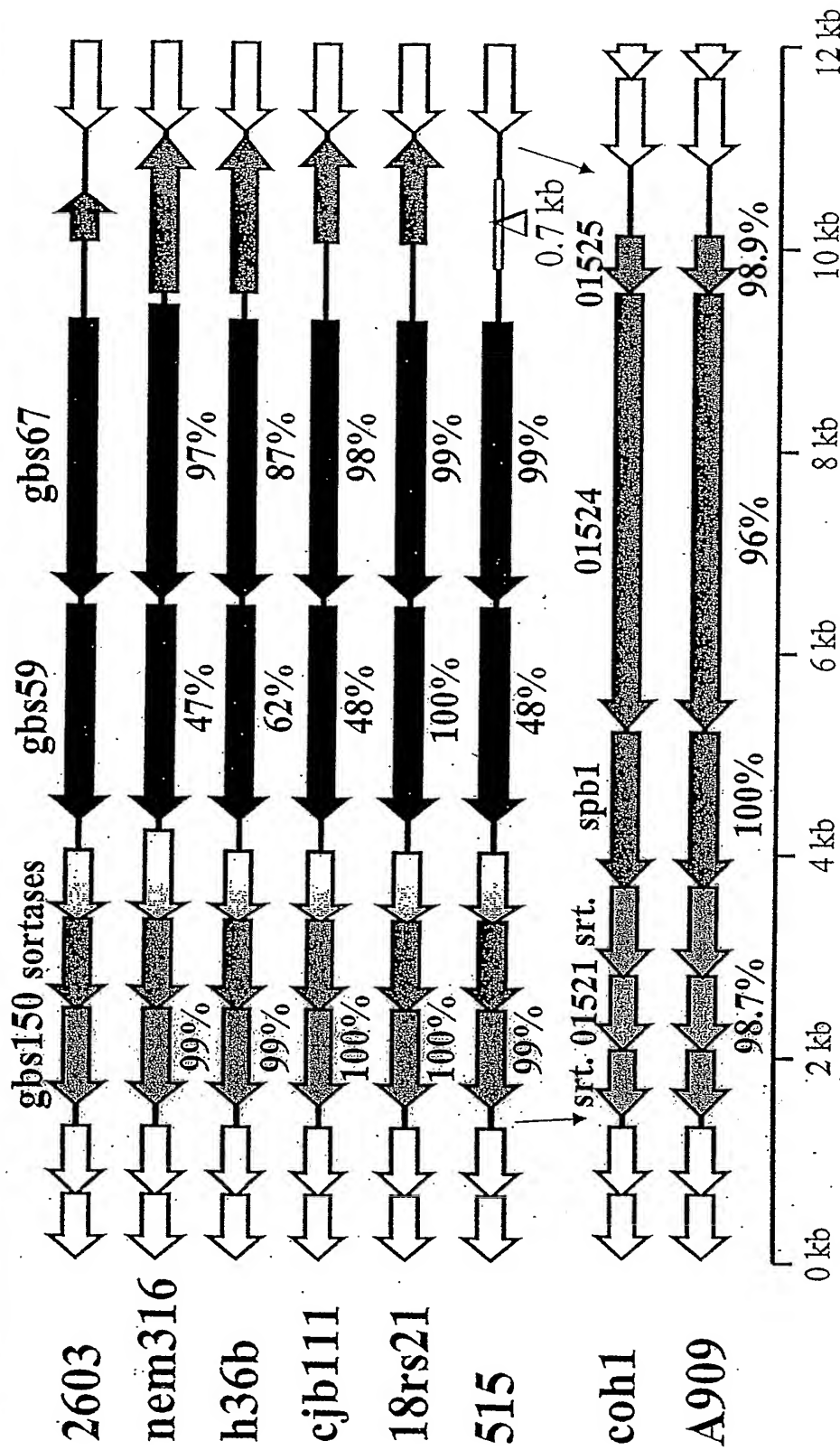


Figure 5: Purified gbs80 protein binds fibronectin and fibrinogen in an ELISA

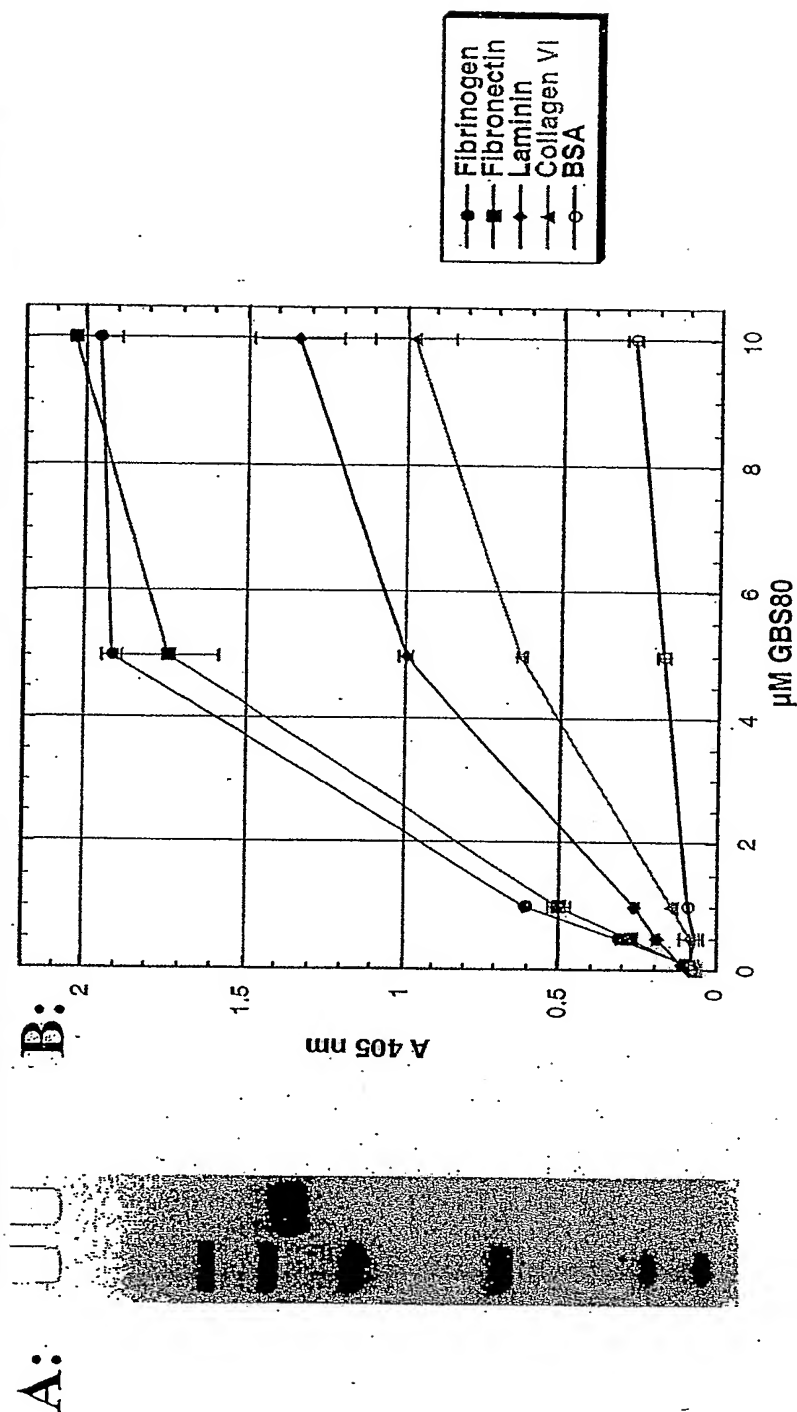


Figure 6: Adhesion Island I is an operon by RT-PCR

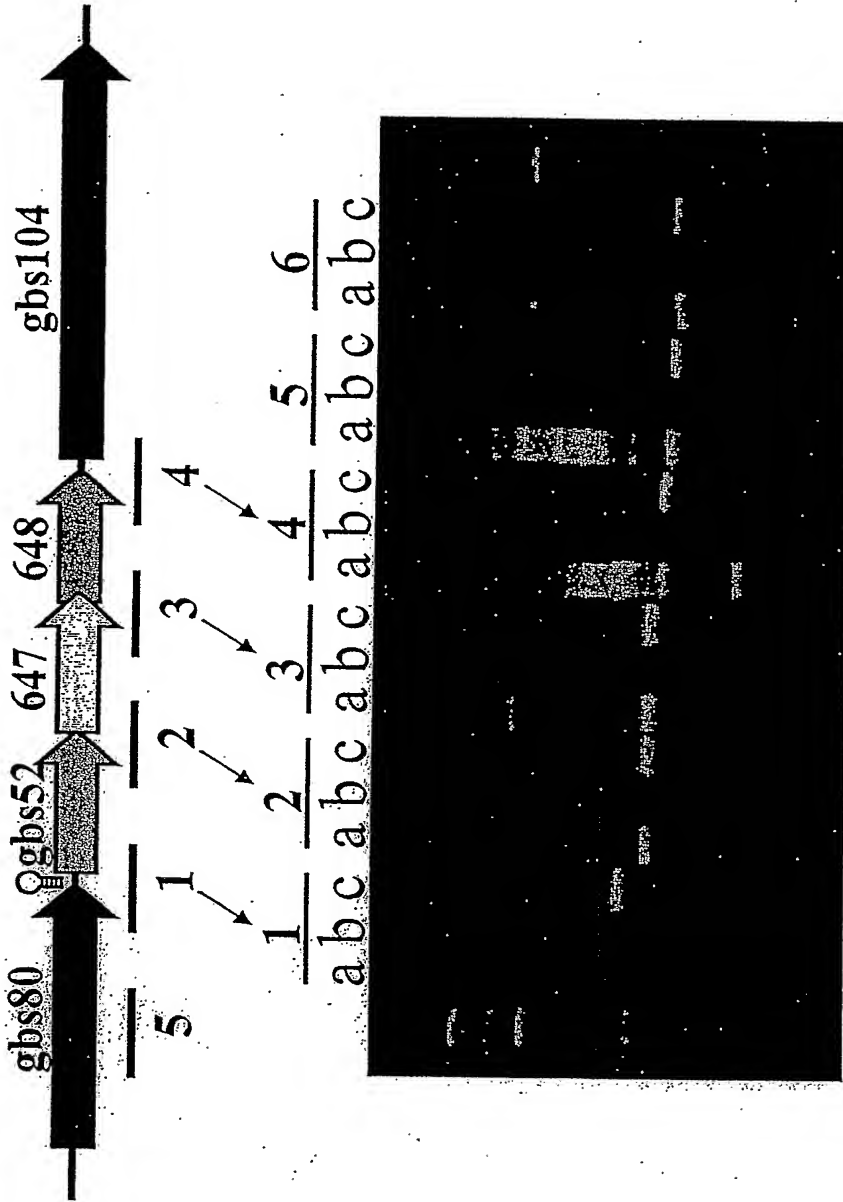


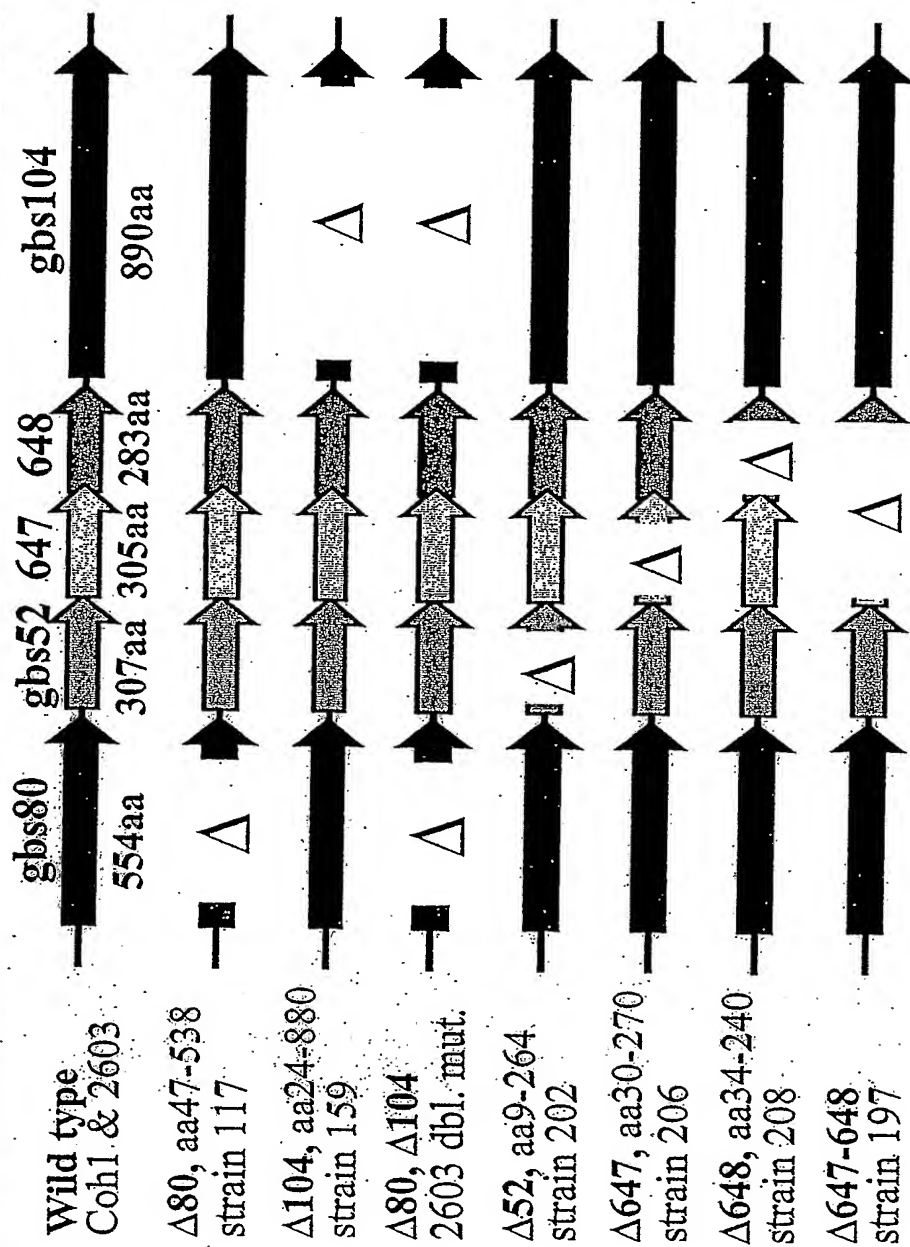
Figure 7: In frame deletions of AI-1 genes

Figure 8: gbs80 is required for surface localization of gbs104

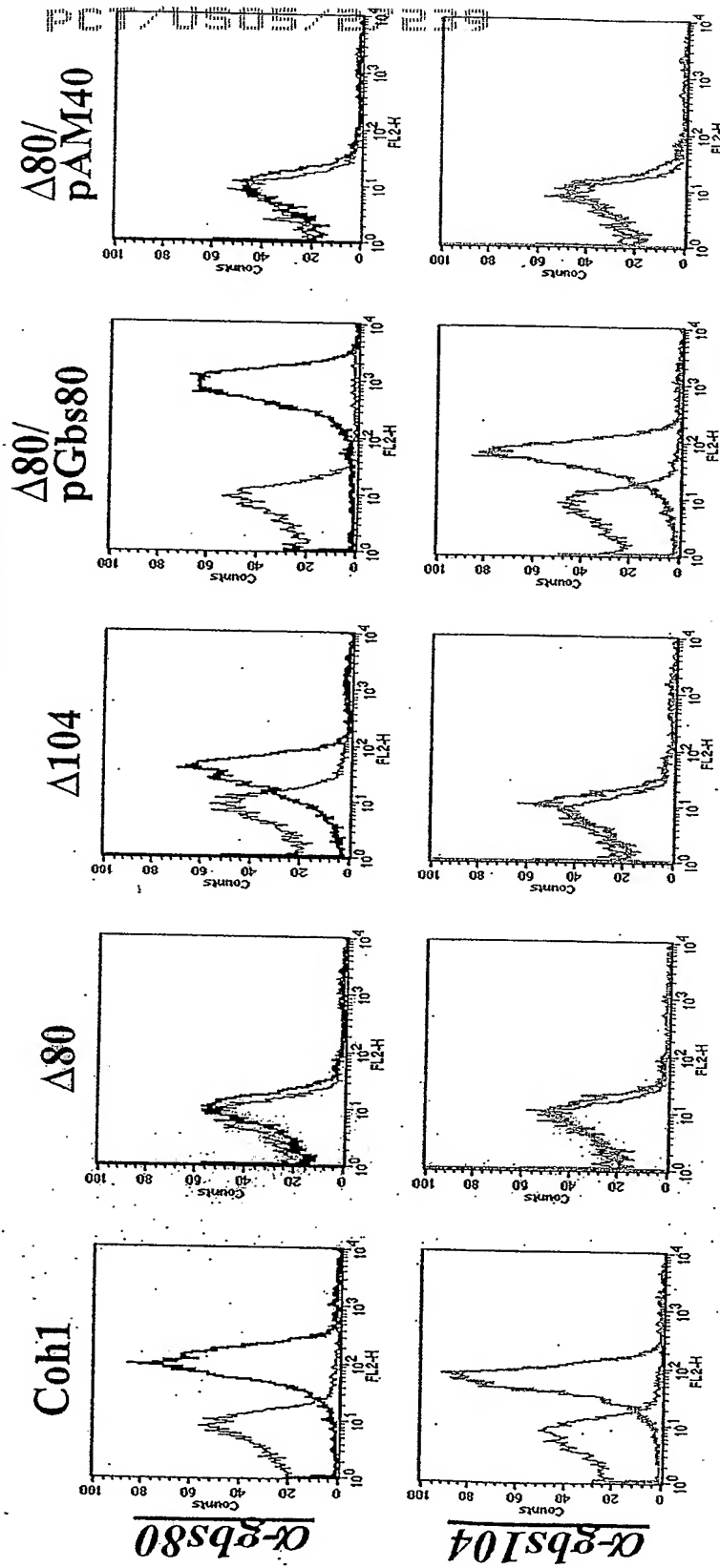


Figure 9: sortases 647 & 648 play a semi-redundant role in surface exposure of gbs80 and gbs104

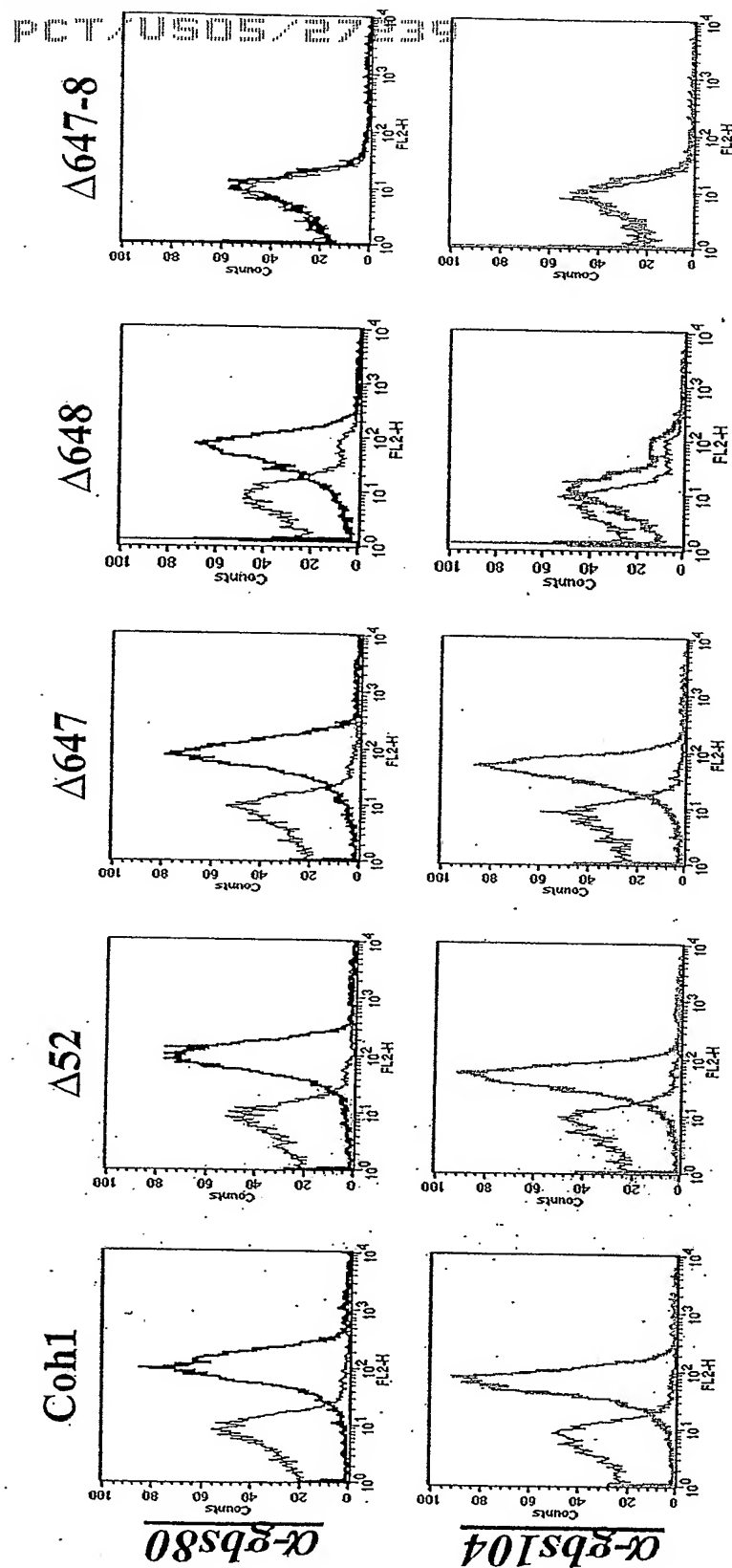
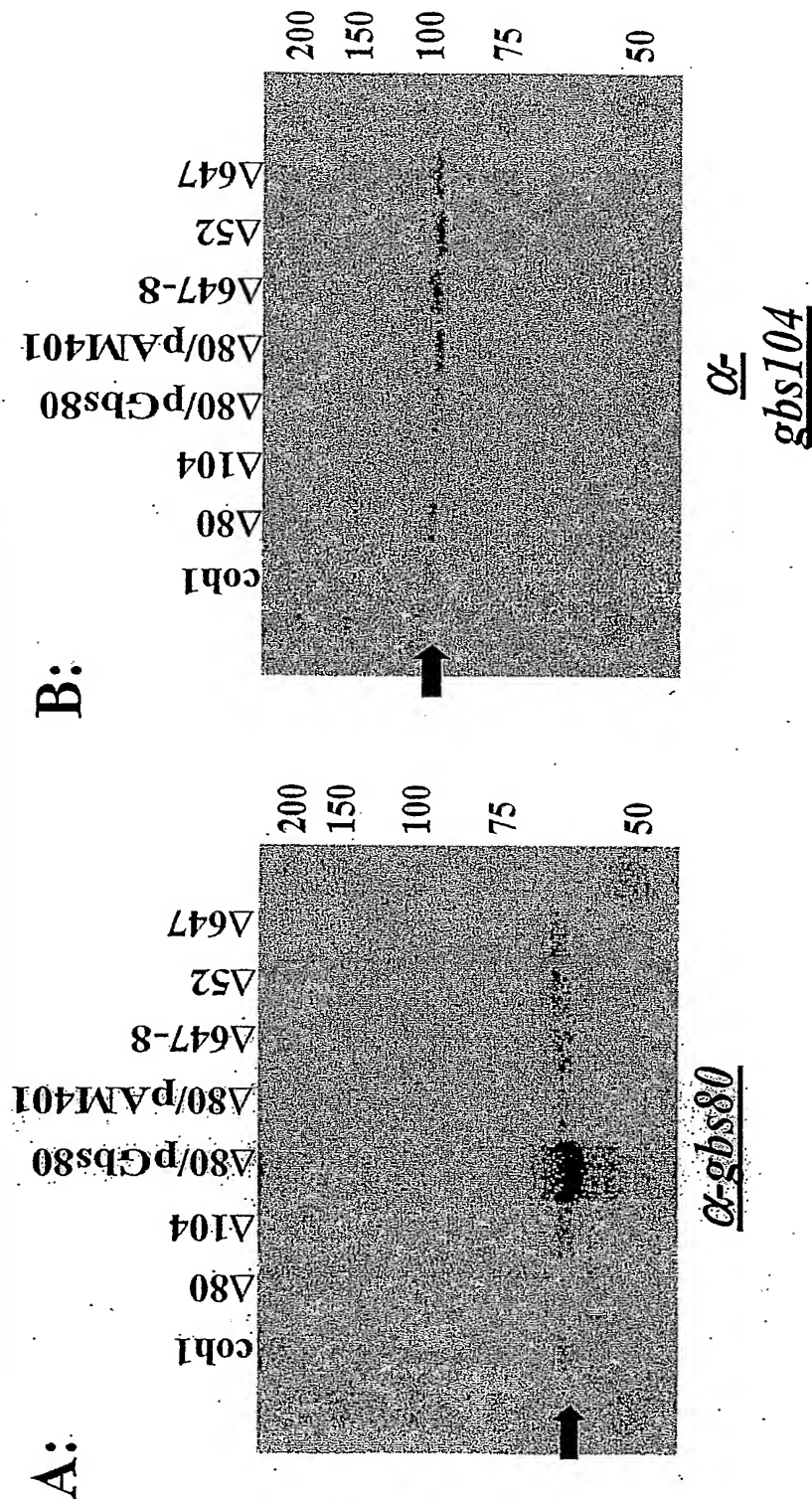


Figure 10: Western blot of mutant strains



**FIGURE 11: Pre-embedding IEM
staining of GBS 80**

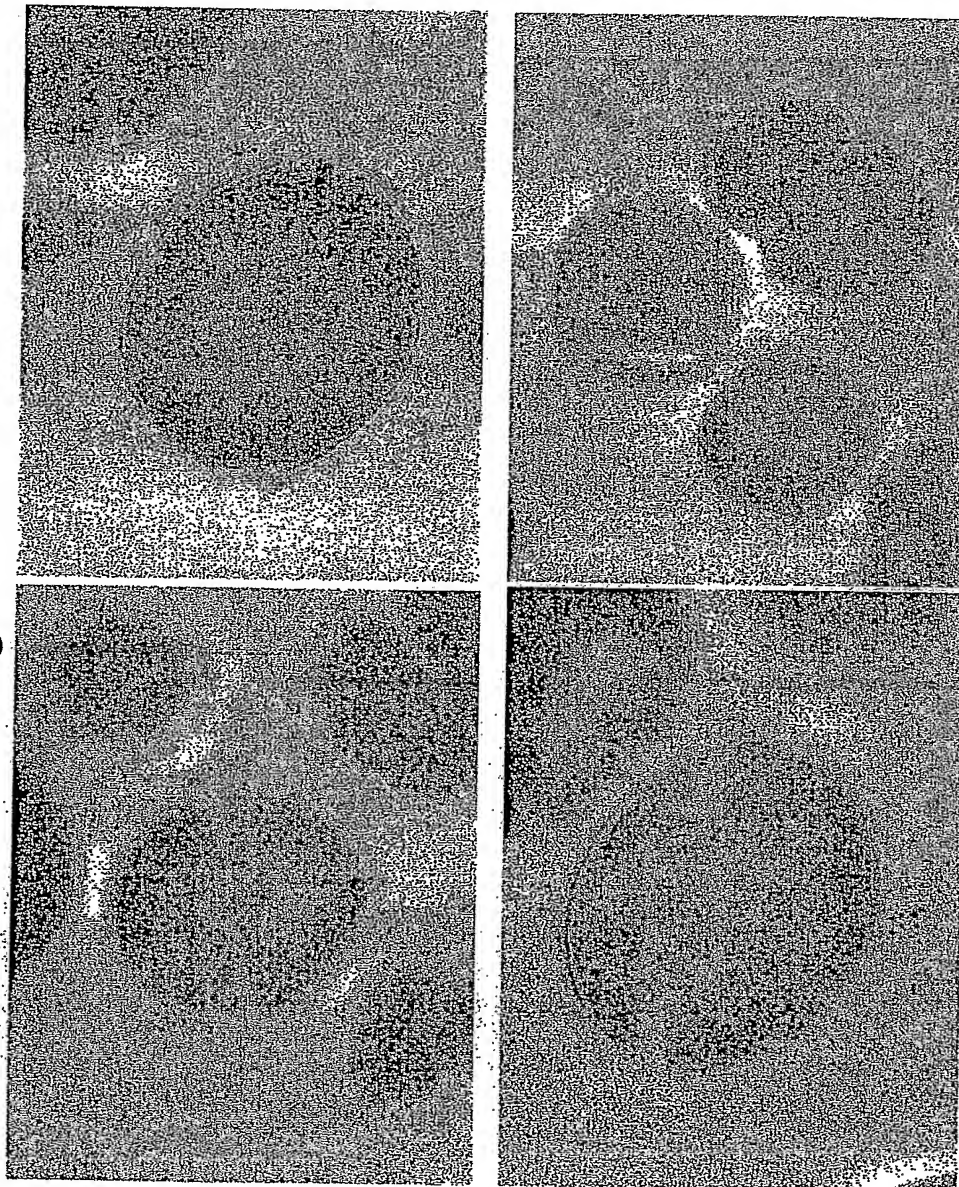
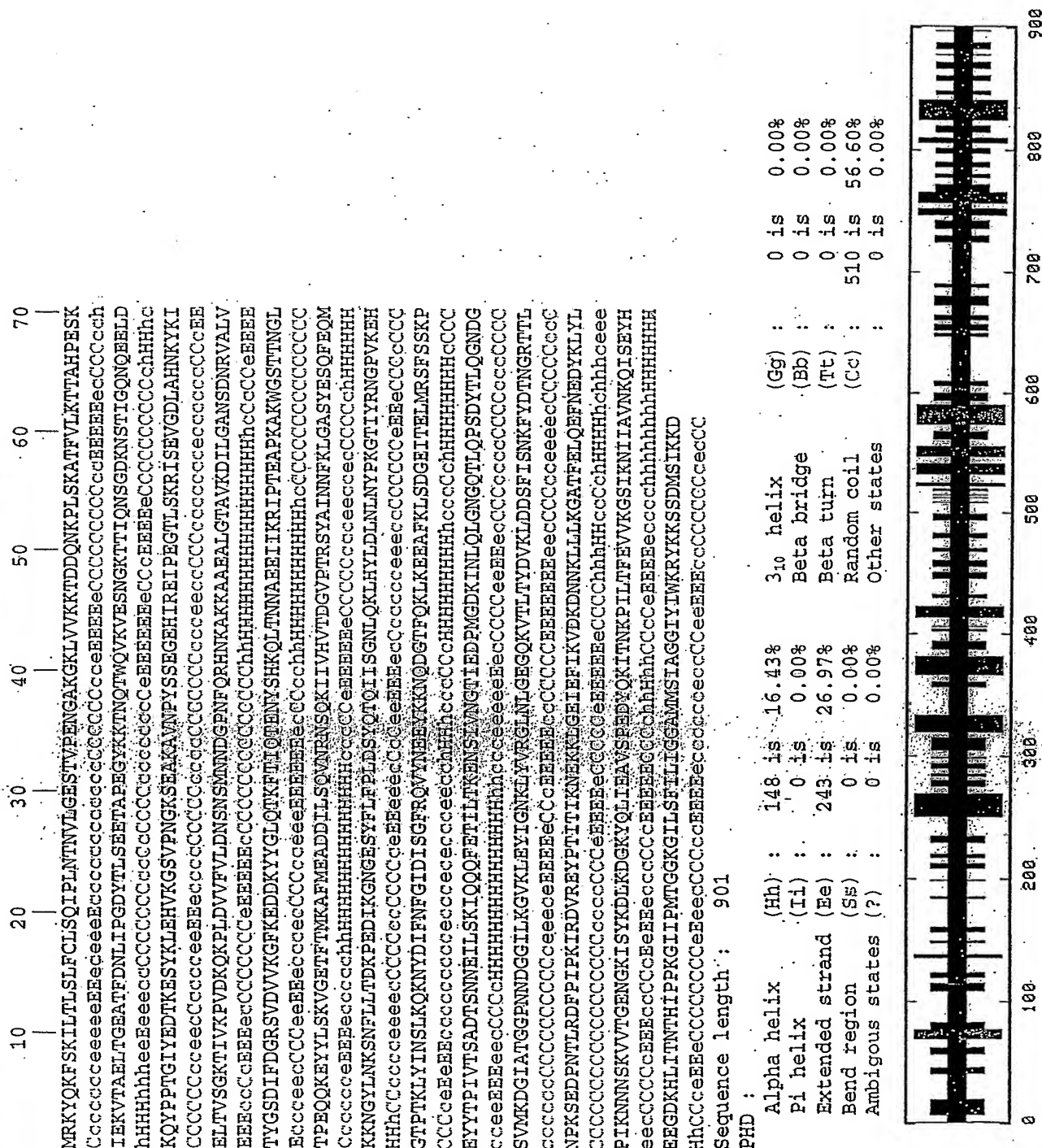


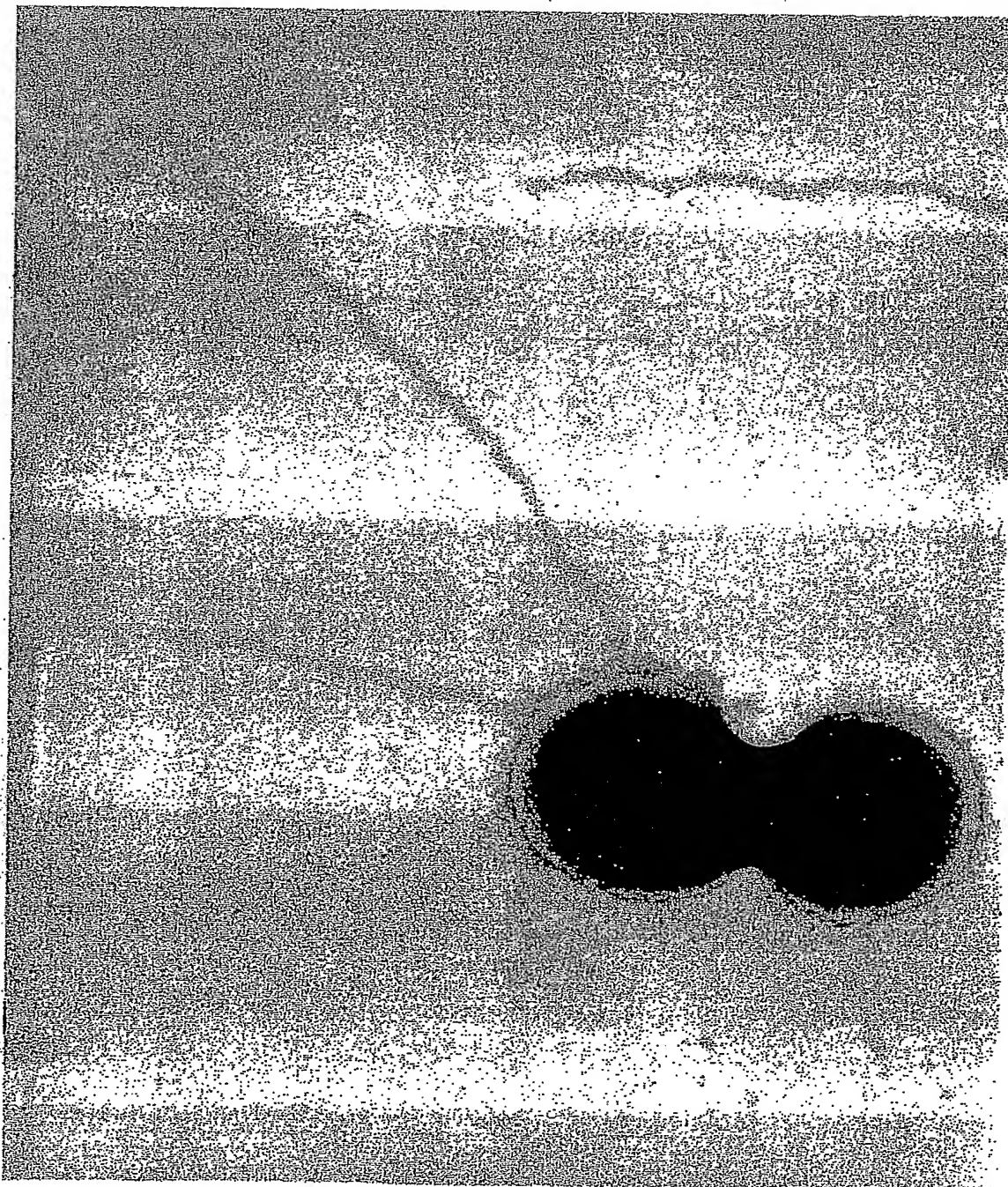
FIGURE 12: Predicted Secondary Structure for GBS 067

PHD SECONDARY STRUCTURE PREDICTION for GBS 067



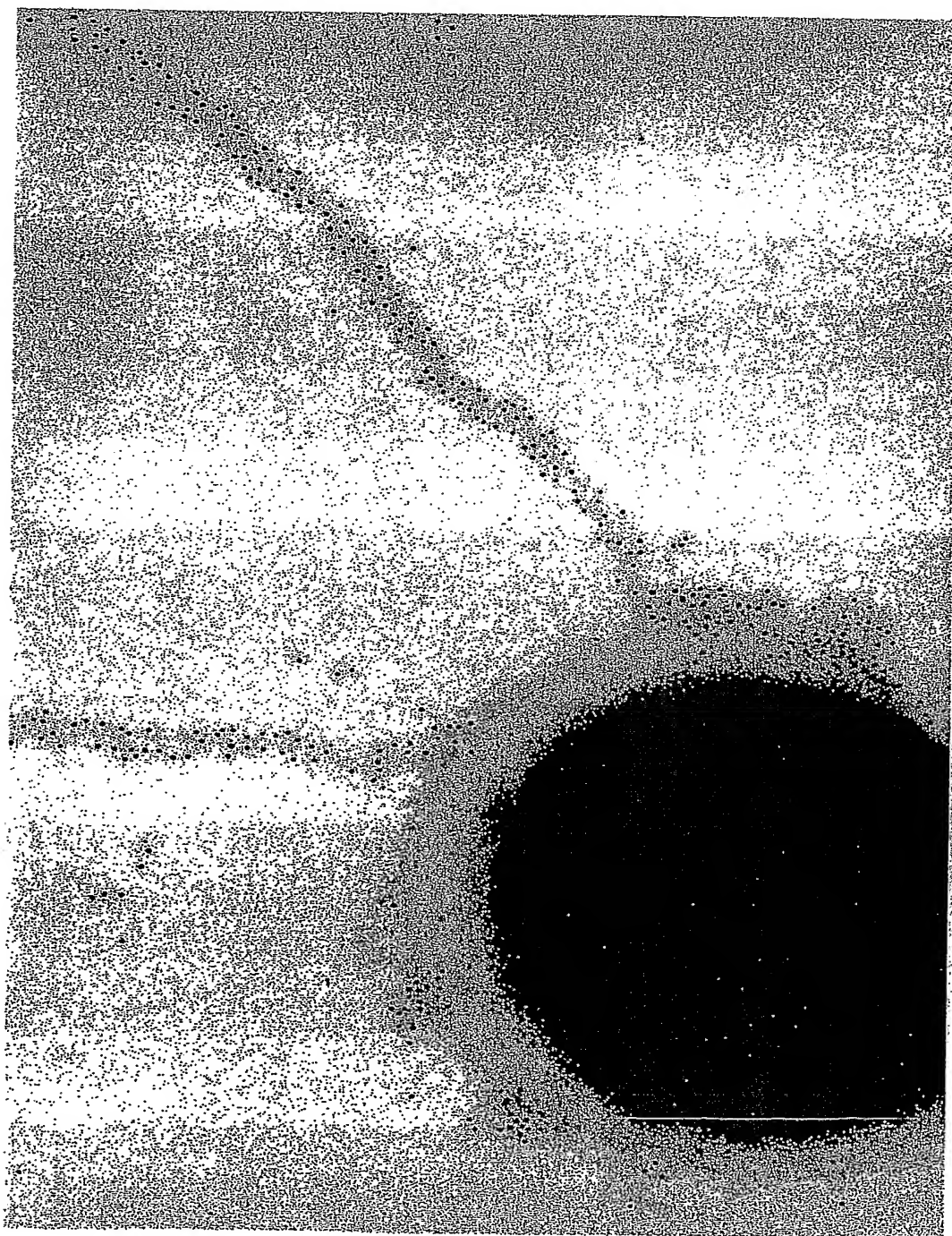
PCT/US05/27239/13/487

Figure 13



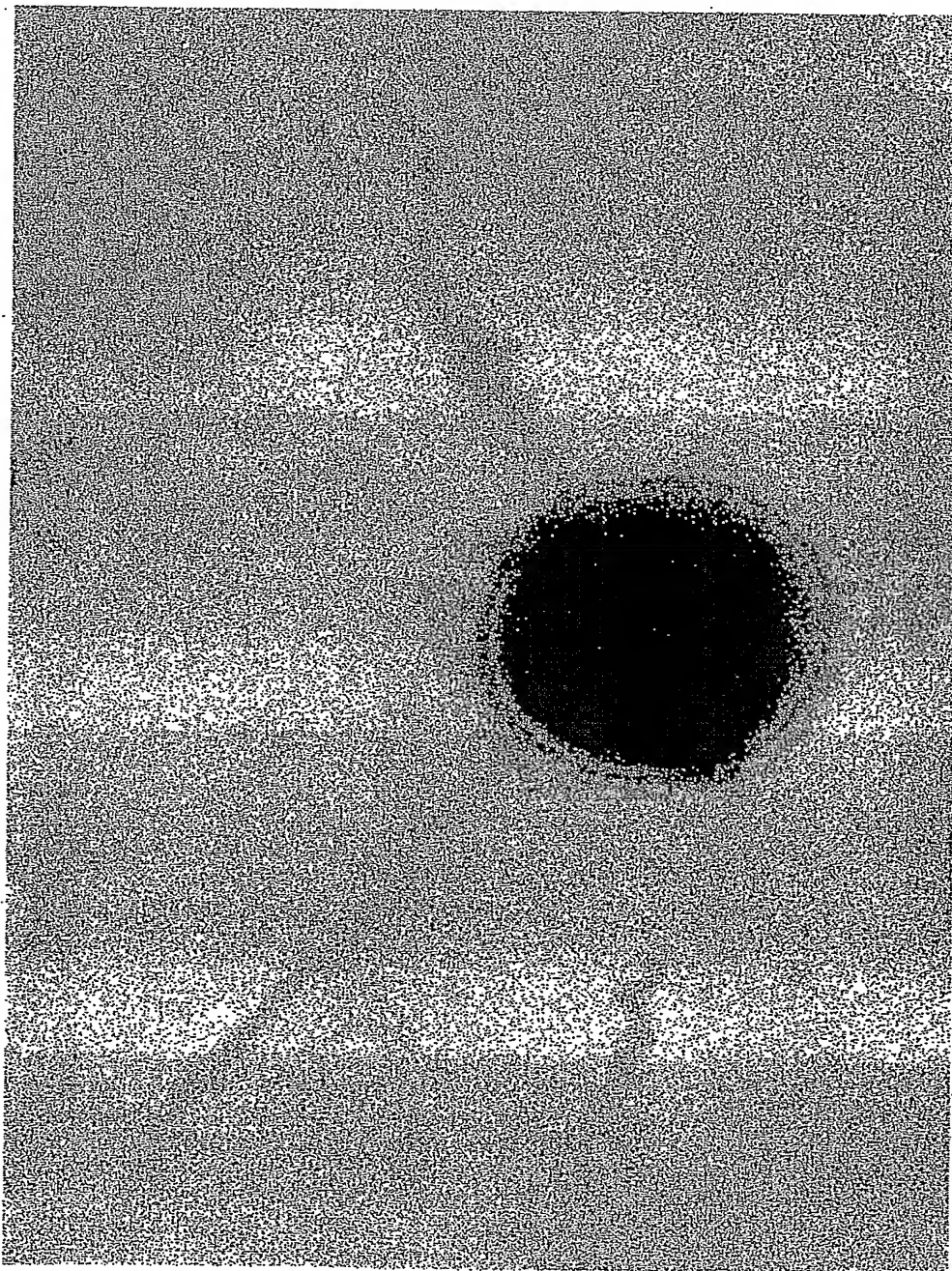
PCT/US05/27239 14/487

Figure 14



PCT/US05/27239 15/487

Figure 15



PCT/US05/27239 16/487

Figure 16

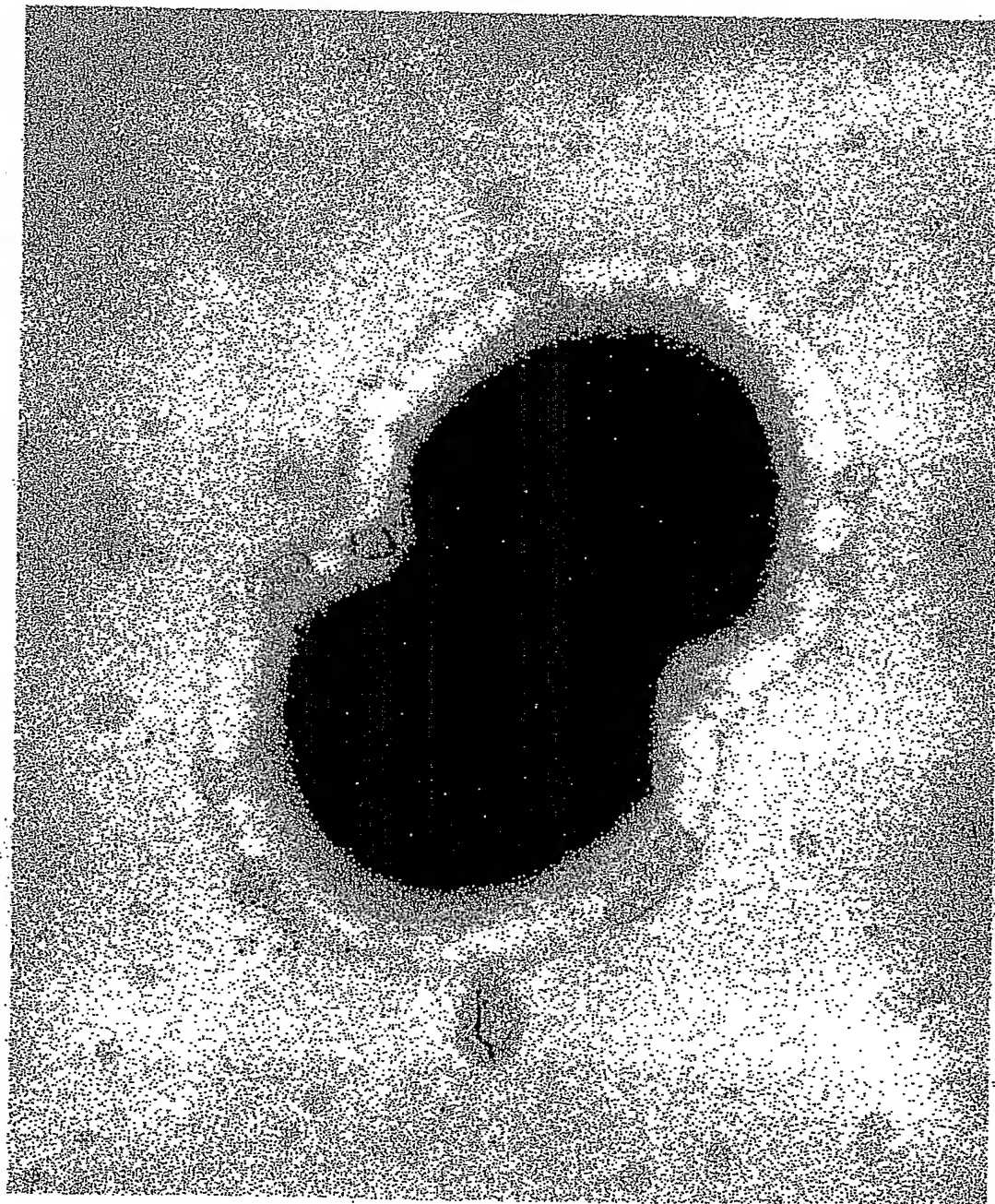
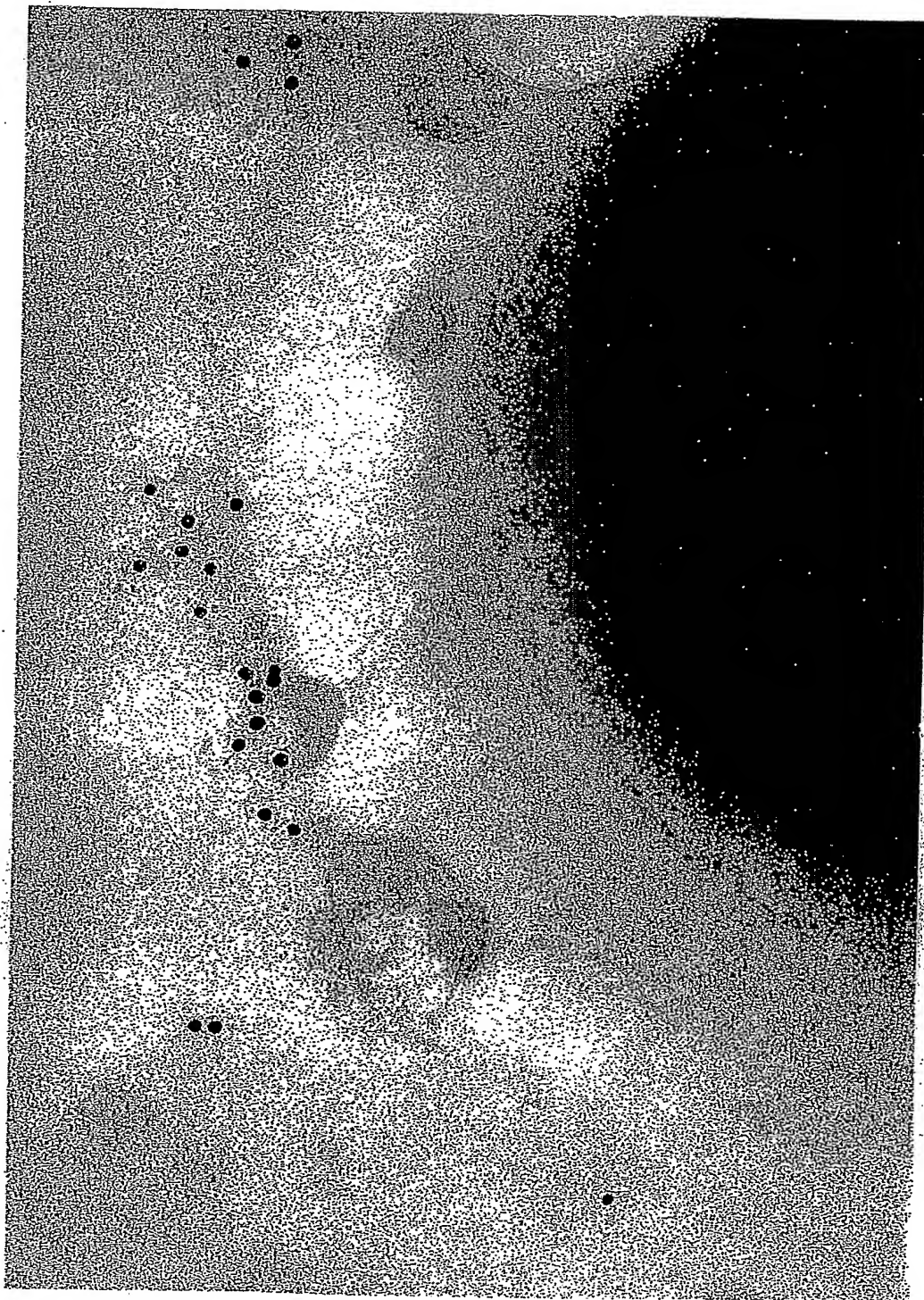


Figure 17





19/487

T G A C C A A A G G A A G A A T C A C C G A T G A C T T T A A C C G T A A T C T T G C T A T C G C C Majority					
	360	370	380	390	400
150	T G A C C A A A G G A A G A A T C A C C G A T G A C T T T A A C C G T A A T C T T G C T A T C G C C	2603_all.seq			
119	T G A C C A A A G G A A G A A T C A C C G A T G A C T T T A A C C G T A A T C T T G C T A T C G C C	18rs21_all.seq			
151	T G A C C A A A G G A A G A A T C A C C G A T G A C T T T A A C C G T A A T C T T G C T A T C G C C	cohl_all.seq			
150	T G A C C A A A G G A A G A A T C A C C G A T G A C T T T A A C C G T A A T C T T G C T A T C G C C	cjb111_all.seq			
151	T G A C C A A A G G A A G A A T C A C C G A T G A C T T T A A C C G T A A T C T T G C T A T C G C C	nem316_all.seq			
151	T G A C C A A A G G A A G A A T C A C C G A T G A C T T T A A C C G T A A T C T T G C T A T C G C C	a909_all.seq			
T T T T T G A T T A G C C G C T A A T A T T T T G A T T A G C A A T C A G G G T G C C A C C A A G A G Majority					
	410	420	430	440	450
100	T T T T T G A T T A G C C G C T A A T A T T T T G A T T A G C A A T C A G G G T G C C A C C A A G A G	2603_all.seq			
69	T T T T T G A T T A G C C G C T A A T A T T T T G A T T A G C A A T C A G G G T G C C A C C A A G A G	18rs21_all.seq			
101	T T T T T G A T T A G C C G C T A A T A T T T T G A T T A G C A A T C A G G G T G C C A C C A A G A G	cohl_all.seq			
100	T T T T T G A T T A G C C G C T A A T A T T T T G A T T A G C A A T C A G G G T G C C A C C A A G A G	cjb111_all.seq			
101	T T T T T G A T T A G C C G C T A A T A T T T T G A T T A G C A A T C A G G G T G C C A C C A A G A G	nem316_all.seq			
101	T T T T T G A T T A G C C G C T A A T A T T T T G A T T A G C A A T C A G G G T G C C A C C A A G A G	a909_all.seq			
C A A C T G T T G A A G A C G A C A A G G T A T G A T G T T T T T C C T G A G C C A A T T T A A C A Majority					
	460	470	480	490	500
50	C A A C T G T T G A A G A C G A C A A G G T A T G A T G T T T T T C C T G A G C C A A T T T A A C A	2603_all.seq			
19	C A A C T G T T G A A G A C G A C A A G G T A T G A T G T T T T T C C T G A G C C A A T T T A A C A	18rs21_all.seq			
51	C A A C T G T T G A A G A C G A C A A G G T A T G A T G T T T T T C C T G A G C C A A T T T A A C A	cohl_all.seq			
50	C A A C T G T T G A A G A C G A C A A G G T A T G A T G T T T T T C C T G A G C C A A T T T A A C A	cjb111_all.seq			
51	C A A C T G T T G A A G A C G A C A A G G T A T G A T G T T T T T C C T G A G C C A A T T T A A C A	nem316_all.seq			
51	C A A C T G T T G A A G A C G A C A A G G T A T G A T G T T T T T C C T G A G C C A A T T T A A C A	a909_all.seq			
G T C T C G G T G C T A T C G A G G A C A T A A G A C C T G A A G G C A C C A G A G G C A G A A A T Majority					
	510	520	530	540	550
00	G T C T C G G T G C T A T C G A G G A C A T A A G A C C T G A A G G C A C C A G A G G C A G A A A T	2603_all.seq			
69	G T C T C G G T G C T A T C G A G G A C A T A A G A C C T G A A G G C A C C A G A G G C A G A A A T	18rs21_all.seq			
01	G T C T C G G T G C T A T C G A G G A C A T A A G A C C T G A A G G C A C C A G A G G C A G A A A T	cohl_all.seq			
00	G T C T C G G T G C T A T C G A G G A C A T A A G A C C T G A A G G C A C C A G A G G C A G A A A T	cjb111_all.seq			
01	G T C T C G G T G C T A T C G A G G A C A T A A G A C C T G A A G G C A C C A G A G G C A G A A A T	nem316_all.seq			
01	G T C T C G G T G C T A T C G A G G A C A T A A G A C C T G A A G G C A C C A G A G G C A G A A A T	a909_all.seq			
T G A T T T A A T A A T T T T A T C C A T A A C C T A T G T T A T A G C A C A A A G A G A G A G T T Majority					
	560	570	580	590	600
50	T G A T T T A A T A A T T T T A T C C A T A A C C T A T G T T A T A G C A C A A A G A G A G A G T T	2603_all.seq			
19	T G A T T T A A T A A T T T T A T C C A T A A C C T A T G T T A T A G C A C A A A G A G A G A G T T	18rs21_all.seq			
51	T G A T T T A A T A A T T T T A T C C A T A A C C T A T G T T A T A G C A C A A A G A G A G A G T T	cohl_all.seq			
50	T G A T T T A A T A A T T T T A T C C A T A A C C T A T G T T A T A G C A C A A A G A G A G A G T T	cjb111_all.seq			
51	T G A T T T A A T A A T T T T A T C C A T A A C C T A T G T T A T A G C A C A A A G A G A G A G T T	nem316_all.seq			
51	T G A T T T A A T A A T T T T A T C C A T A A C C T A T G T T A T A G C A C A A A G A G A G A G T T	a909_all.seq			
T G T A T G G A C T G G A T T A G C T G A A A A T T T T A G A C T A A A A A G T A G T G C C A G T G Majority					
	610	620	630	640	650
10	T G T A T G G A C T G G A T T A G C T G A A A A T T T T A G A C T A A A A A G T A G T G C C A G T G	2603_all.seq			
19	T G T A T G G A C T G G A T T A G C T G A A A A T T T T A G A C T A A A A A G T A G T G C C A G T G	18rs21_all.seq			
11	T G T A T G G A C T G G A T T A G C T G A A A A T T T T A G A C T A A A A A G T A G T G C C A G T G	cohl_all.seq			
10	T G T A T G G A C T G G A T T A G C T G A A A A T T T T A G A C T A A A A A G T A G T G C C A G T G	cjb111_all.seq			
11	T G T A T G G A C T G G A T T A G C T G A A A A T T T T A G A C T A A A A A G T A G T G C C A G T G	nem316_all.seq			
11	T G T A T G G A C T G G A T T A G C T G A A A A T T T T A G A C T A A A A A G T A G T G C C A G T G	a909_all.seq			
G A T T T T G A A A G G T A A C A A A A G A G T C T T C C G T T T A A A C C G A G A A G C C T G T T T Majority					
	660	670	680	690	700
10	G A T T T T G A A A G G T A A C A A A A G A G T C T T C C G T T T A A A C C G A G A A G C C T G T T T	2603_all.seq			
19	G A T T T T G A A A G G T A A C A A A A G A G T C T T C C G T T T A A A C C G A G A A G C C T G T T T	18rs21_all.seq			
10	G A T T T T G A A A G G T A A C A A A A G A G T C T T C C G T T T A A A C C G A G A A G C C T G T T T	cohl_all.seq			
11	G A T T T T G A A A G G T A A C A A A A G A G T C T T C C G T T T A A A C C G A G A A G C C T G T T T	cjb111_all.seq			
11	G A T T T T G A A A G G T A A C A A A A G A G T C T T C C G T T T A A A C C G A G A A G C C T G T T T	nem316_all.seq			
11	G A T T T T G A A A G G T A A C A A A A G A G T C T T C C G T T T A A A C C G A G A A G C C T G T T T	a909_all.seq			

FIGURE 18 A

TTAGTCGTTTTCAGATGAAGGCCAAAAGGACGATGAATAATTCCGTACCTT Majority									
710		720		730		740		750	
00	TTAGTCGTTTTCAGATGAAGGCCAAAAGGACGATGAATAATTCCGTACCTT	2603_all.seq							
69	TTAGTCGTTTTCAGATGAAGGCCAAAAGGACGATGAATAATTCCGTACCTT	18rs21_all.seq							
01	TTAGTCGTTTTCAGATGAAGGCCAAAAGGACGATGAATAATTCCGTACCTT	cohl_all.seq							
00	TTAGTCGTTTTCAGATGAAGGCCAAAAGGACGATGAATAATTCCGTACCTT	cjb111_all.seq							
01	TTAGTCGTTTTCAGATGAAGGCCAAAAGGACGATGAATAATTCCGTACCTT	nem316_all.seq							
01	TTAGTCGTTTTCAGATGAAGGCCAAAAGGACGATGAATAATTCCGTACCTT	a909_all.seq							
CATGGATTGCTATGTTACTGGCATGAGGTCTCACGATATTTTAGTAAGATA Majority									
760		770		780		790		800	
50	CATGGATTGCTATGTTACTGGCATGAGGTCTCACGATATTTTAGTAAGATA	2603_all.seq							
19	CATGGATTGCTATGTTACTGGCATGAGGTCTCACGATATTTTAGTAAGATA	18rs21_all.seq							
51	CATGGATTGCTATGTTACTGGCATGAGGTCTCACGATATTTTAGTAAGATA	cohl_all.seq							
50	CATGGATTGCTATGTTACTGGCATGAGGTCTCACGATATTTTAGTAAGATA	cjb111_all.seq							
51	CATGGATTGCTATGTTACTGGCATGAGGTCTCACGATATTTTAGTAAGATA	nem316_all.seq							
51	CATGGATTGCTATGTTACTGGCATGAGGTCTCACGATATTTTAGTAAGATA	a909_all.seq							
TTCGTTTGAAGATATTTCCACGTAATTTTTTAAAGGTTTTTAAGAAAATCTG Majority									
810		820		830		840		850	
00	TTCGTTTGAAGATATTTCCACGTAATTTTTTAAAGGTTTTTAAGAAAATCTG	2603_all.seq							
69	TTCGTTTGAAGATATTTCCACGTAATTTTTTAAAGGTTTTTAAGAAAATCTG	18rs21_all.seq							
01	TTCGTTTGAAGATATTTCCACGTAATTTTTTAAAGGTTTTTAAGAAAATCTG	cohl_all.seq							
00	TTCGTTTGAAGATATTTCCACGTAATTTTTTAAAGGTTTTTAAGAAAATCTG	cjb111_all.seq							
01	TTCGTTTGAAGATATTTCCACGTAATTTTTTAAAGGTTTTTAAGAAAATCTG	nem316_all.seq							
01	TTCGTTTGAAGATATTTCCACGTAATTTTTTAAAGGTTTTTAAGAAAATCTG	a909_all.seq							
TGGTGTCTGTAAAAATGTAATAATTTTCGCTACTTCCCAATCGGTACCCCT Majority									
860		870		880		890		900	
50	TGGTGTCTGTAAAAATGTAATAATTTTCGCTACTTCCCAATCGGTACCCCT	2603_all.seq							
19	TGGTGTCTGTAAAAATGTAATAATTTTCGCTACTTCCCAATCGGTACCCCT	18rs21_all.seq							
51	TGGTGTCTGTAAAAATGTAATAATTTTCGCTACTTCCCAATCGGTACCCCT	cohl_all.seq							
50	TGGTGTCTGTAAAAATGTAATAATTTTCGCTACTTCCCAATCGGTACCCCT	cjb111_all.seq							
51	TGGTGTCTGTAAAAATGTAATAATTTTCGCTACTTCCCAATCGGTACCCCT	nem316_all.seq							
51	TGGTGTCTGTAAAAATGTAATAATTTTCGCTACTTCCCAATCGGTACCCCT	a909_all.seq							
CTTTGCAGTAGTAATTGTCCCTCCTTAATTTTTTGCCTTTAGAAATATAACT Majority									
910		920		930		940		950	
00	CTTTGCAGTAGTAATTGTCCCTCCTTAATTTTTTGCCTTTAGAAATATAACT	2603_all.seq							
19	CTTTGCAGTAGTAATTGTCCCTCCTTAATTTTTTGCCTTTAGAAATATAACT	18rs21_all.seq							
01	CTTTGCAGTAGTAATTGTCCCTCCTTAATTTTTTGCCTTTAGAAATATAACT	cohl_all.seq							
00	CTTTGCAGTAGTAATTGTCCCTCCTTAATTTTTTGCCTTTAGAAATATAACT	cjb111_all.seq							
01	CTTTGCAGTAGTAATTGTCCCTCCTTAATTTTTTGCCTTTAGAAATATAACT	nem316_all.seq							
01	CTTTGCAGTAGTAATTGTCCCTCCTTAATTTTTTGCCTTTAGAAATATAACT	a909_all.seq							
TTGCAAGCAAATGTCAGAGTATTTTTTTAAAAAACTGAGCGTAAGTCCGAAT Majority									
960		970		980		990		1000	
00	TTGCAAGCAAATGTCAGAGTATTTTTTTAAAAAACTGAGCGTAAGTCCGAAT	2603_all.seq							
19	TTGCAAGCAAATGTCAGAGTATTTTTTTAAAAAACTGAGCGTAAGTCCGAAT	18rs21_all.seq							
01	TTGCAAGCAAATGTCAGAGTATTTTTTTAAAAAACTGAGCGTAAGTCCGAAT	cohl_all.seq							
00	TTGCAAGCAAATGTCAGAGTATTTTTTTAAAAAACTGAGCGTAAGTCCGAAT	cjb111_all.seq							
01	TTGCAAGCAAATGTCAGAGTATTTTTTTAAAAAACTGAGCGTAAGTCCGAAT	nem316_all.seq							
01	TTGCAAGCAAATGTCAGAGTATTTTTTTAAAAAACTGAGCGTAAGTCCGAAT	a909_all.seq							
CTGAGATATATAGGTAAGTTGGCAATATCAGATACTTTGAGTTTGGAGTAG Majority									
1010		1020		1030		1040		1050	
00	CTGAGATATATAGGTAAGTTGGCAATATCAGATACTTTGAGTTTGGAGTAG	2603_all.seq							
19	CTGAGATATATAGGTAAGTTGGCAATATCAGATACTTTGAGTTTGGAGTAG	18rs21_all.seq							
01	CTGAGATATATAGGTAAGTTGGCAATATCAGATACTTTGAGTTTGGAGTAG	cohl_all.seq							
00	CTGAGATATATAGGTAAGTTGGCAATATCAGATACTTTGAGTTTGGAGTAG	cjb111_all.seq							
01	CTGAGATATATAGGTAAGTTGGCAATATCAGATACTTTGAGTTTGGAGTAG	nem316_all.seq							
01	CTGAGATATATAGGTAAGTTGGCAATATCAGATACTTTGAGTTTGGAGTAG	a909_all.seq							

FIGURE 18 B

Alignment Report of A1-1 alignment, using J. Hein method with Weighted residue weight table.
Thursday, July 29, 2004 5:46 PM

A G G T C G G T T G T C C A C A T A A T G G A C A A T A C T A T T G T A C A T T T G C T G C T T G T C											Majority	
		1060		1070		1080		1090		1100		
1050		A G G T C G G T T G T C C A C A T A A T G G A C A A T A C T A T T G T A C A T T T G C T G C T T G T C										2603_all.seq
819		A G G T C G G T T G T C C A C A T A A T G G A C A A T A C T A T T G T A C A T T T G C T G C T T G T C										18rs21_all.seq
1051		A G G T C G G T T G T C C A C A T A A T G G A C A A T A C T A T T G T A C A T T T G C T G C T T G T C										cohl1_all.seq
1050		A G G T C G G T T G T C C A C A T A A T G G A C A A T A C T A T T G T A C A T T T G C T G C T T G T C										cjb111_all.seq
1051		A G G T C G G T T G T C C A C A T A A T G G A C A A T A C T A T T G T A C A T T T G C T G C T T G T C										nen316_all.seq
1051		A G G T C G G T T G T C C A C A T A A T G G A C A A T A C T A T T G T A C A T T T G C T G C T T G T C										a909_all.seq
A G A G A T G C T C T T A T T G C T T A A G G A T T C T G A A A A A T C A A T A A G A G C T G C A C											Majority	
		1110		1120		1130		1140		1150		
1100		A G A G A T G C T C T T A T T G C T T A A G G A T T C T G A A A A A T C A A T A A G A G C T G C A C										2603_all.seq
869		A G A G A T G C T C T T A T T G C T T A A G G A T T C T G A A A A A T C A A T A A G A G C T G C A C										18rs21_all.seq
1101		A G A G A T G C T C T T A T T G C T T A A G G A T T C T G A A A A A T C A A T A A G A G C T G C A C										cohl1_all.seq
1100		A G A G A T G C T C T T A T T G C T T A A G G A T T C T G A A A A A T C A A T A A G A G C T G C A C										cjb111_all.seq
1101		A G A G A T G C T C T T A T T G C T T A A G G A T T C T G A A A A A T C A A T A A G A G C T G C A C										nen316_all.seq
1101		A G A G A T G C T C T T A T T G C T T A A G G A T T C T G A A A A A T C A A T A A G A G C T G C A C										a909_all.seq
A G C C A A T T C T T G A A A C A T C A A T A A G A T C A G G A G C C T C T T C G T T T A A A G C C											Majority	
		1160		1170		1180		1190		1200		
1150		A G C C A A T T C T T G A A A C A T C A A T A A G A T C A G G A G C C T C T T C G T T T A A A G C C										2603_all.seq
919		A G C C A A T T C T T G A A A C A T C A A T A A G A T C A G G A G C C T C T T C G T T T A A A G C C										18rs21_all.seq
1151		A G C C A A T T C T T G A A A C A T C A A T A A G A T C A G G A G C C T C T T C G T T T A A A G C C										cohl1_all.seq
1150		A G C C A A T T C T T G A A A C A T C A A T A A G A T C A G G A G C C T C T T C G T T T A A A G C C										cjb111_all.seq
1151		A G C C A A T T C T T G A A A C A T C A A T A A G A T C A G G A G C C T A T T C G T T T A A A G C C										nen316_all.seq
1151		A G C C A A T T C T T G A A A C A T C A A T A A G A T C A G G A G C C T C T T C G T T T A A A G C C										a909_all.seq
A T A T A G T G C T T T A C C A G C G C A T A A C T T T T A G C C A C A T C A G T A T T T T C C T C											Majority	
		1210		1220		1230		1240		1250		
1200		A T A T A G T G C T T T A C C A G C G C A T A A C T T T T A G C C A C A T C A G T A T T T T C C T C										2603_all.seq
169		A T A T A G T G C T T T A C C A G C G C A T A A C T T T T A G C C A C A T C A G T A T T T T C C T C										18rs21_all.seq
1201		A T A T A G T G C T T T A C C A G C G C A T A A C T T T T A G C C A C A T C A G T A T T T T C C T C										cohl1_all.seq
1200		A T A T A G T G C T T T A C C A G C G C A T A A C T T T T A G C C A C A T C A G T A T T T T C T C										cjb111_all.seq
1201		A T A T A G T G C T T T A C C A G C G C A T A A C T T T T A G C C A C A T C A G T A T T T T C C T C										nen316_all.seq
1201		A T A T A G T G C T T T A C C A G C G C A T A A C T T T T A G C C A C A T C A G T A T T T T C C T C										a909_all.seq
G A A A C T T A A T T C T A G T A A T T T T G T T A A G T A A A C A A C A G T T A A G T T C T T T T											Majority	
		1260		1270		1280		1290		1300		
250		G A A A C T T A A T T C T A G T A A T T T T G T T A A G T A A A C A A C A G T T A A G T T C T T T T										2603_all.seq
019		G A A A C T T A A T T C T A G T A A T T T T G T T A A G T A A A C A A C A G T T A A G T T C T T T T										18rs21_all.seq
251		G A A A C T T A A T T C T A G T A A T T T T G T T A A G T A A A C A A C A G T T A A G T T C T T T T										cohl1_all.seq
250		G A A A C T T A A T T C T A G T A A T T T T G T T A A G T A A A C A A C A G T T A A G T T C T T T T										cjb111_all.seq
251		G A A A C T T A A T T C T A G T A A T T T T G T T A A G T A A A C A A C A G T T A A G T T C T T T T										nen316_all.seq
251		G A A A C T T A A T T C T A G T A A T T T T G T T A A G T A A A C A A C A G T T A A G T T C T T T T										a909_all.seq
C A G C T C T T A G G G C A G G G A T T G A A G A T G A G C T A A C A C T G G A T G A T G G G A G G											Majority	
		1310		1320		1330		1340		1350		
300		C A G C T C T T A G G G C A G G G A T T G A A G A T G A G C T A A C A C T G G A T G A T G G G A G G										2603_all.seq
069		C A G C T C T T A G G G C A G G G A T T G A A G A T G A G C T A A C A C T G G A T G A T G G G A G G										18rs21_all.seq
301		C A G C T C T T A G G G C A G G G A T T G A A G A T G A G C T A A C A C T G G A T G A T G G G A G G										cohl1_all.seq
300		C A G C T C T T A G G G C A G G G A T T G A A G A T G A G C T A A C A C T G G A T G A T G G G A G G										cjb111_all.seq
301		C A G C T C T T A G G G C A G G G A T T G A A G A T G A G C T A A C A C T G G A T G A T G G G A G G										nen316_all.seq
301		C A G C T C T T A G G G C A G G G A T T G A A G A T G A G C T A A C A C T G G A T G A T G G G A G G										a909_all.seq
C G A T T A A T T T C T T G C T T T A A C A G T T G A G T G T T A C C C A G C T T A A C G A G A T C											Majority	
		1360		1370		1380		1390		1400		
350		C G A T T A A T T T C T T G C T T T A A C A G T T G A G T G T T A C C C A G C T T A A C G A G A T C										2603_all.seq
119		C G A T T A A T T T C T T G C T T T A A C A G T T G A G T G T T A C C C A G C T T A A C G A G A T C										18rs21_all.seq
351		C G A T T A A T T T C T T G C T T T A A C A G T T G A G T G T T A C C C A G C T T A A C G A G A T C										cohl1_all.seq
350		C G A T T A A T T T C T T G C T T T A A C A G T T G A G T G T T A C C C A G C T T A A C G A G A T C										cjb111_all.seq
351		C G A T T A A T T T C T T G C T T T A A C A G T T G A G T G T T A C C C A G C T T A A C G A G A T C										nen316_all.seq
351		C G A T T A A T T T C T T G C T T T A A C A G T T G A G T G T T A C C C A G C T T A A C G A G A T C										a909_all.seq

FIGURE 18 C

Alignment Report of Al-1 alignment, using J. Hein method with Weighted residue weight table.
Thursday, July 29, 2004 5:46 PM

A A T A A T G T C A T T C A G A T G G T T A A A A C A G T C G G T A A C T G A A A A G A G T T T T Majority										
1410		1420		1430		1440		1450		
400	A A T A A T G T C A T T C A G A T G G T T T A A A A C A G T C G G C T A A C T G A A A A G A G T T T T									2603_all.seq
169	A A T A A T G T C A T T C A G A T G G T T T A A A A C A G T C G G C T A A C T G A A A A G A G T T T T									18rs21_all.seq
401	A A T A A T G T C A T T C A G A T G G T T T A A A A C A G T C G G C T A A C T G A A A A G A G T T T T									cohl_all.seq
400	A A T A A T G T C A T T C A G A T G G T T T A A A A C A G T C G G C T A A C T G A A A A G A G T T T T									cjb111_all.seq
401	A A T A A T G T C A T T C A G A T G G T T T A A A A C A G T C G G C T A A C T G A A A A G A G T T T T									nea316_all.seq
401	A A T A A T G T C A T T C A G A T G G T T T A A A A C A G T C G G C T A A C T G A A A A G A G T T T T									a909_all.seq
T C T T A G T A T G T T T T A G G T G A A G A A C A A T A T C A G G A T C C G C A A C A A T C T G T Majority										
1460		1470		1480		1490		1500		
450	T C T T A G T A T G T T T T A G G T G A A G A A C A A T A T C A G G A T C C G C A A C A A T C T G T									2603_all.seq
219	T C T T A G T A T G T T T T A G G T G A A G A A C A A T A T C A G G A T C C G C A A C A A T C T G T									18rs21_all.seq
451	T C T T A G T A T G T T T T A G G T G A A G A A C A A T A T C A G G A T C C G C A A C A A T C T G T									cohl_all.seq
450	T C T T A G T A T G T T T T A G G T G A A G A A C A A T A T C A G G A T C C G C A A C A A T C T G T									cjb111_all.seq
451	T C T T A G T A T G T T T T A G G T G A A G A A C A A T A T C A G G A T C C G C A A C A A T C T G T									nea316_all.seq
451	T C T T A G T A T G T T T T A G G T G A A G A A C A A T A T C A G G A T C C G C A A C A A T C T G T									a909_all.seq
T C T G A C T C T T C T A A T A A A T G A T T G A T G G C T T G T T G G C A A C T A G C C T C A A A Majority										
1510		1520		1530		1540		1550		
500	T C T G A C T C T T C T A A T A A A T G A T T G A T G A C T T G T T G G C A A C T A G C C T C A A A									2603_all.seq
269	T C T G A C T C T T C T A A T A A A T G A T T G A T G A C T T G T T G G C A A C T A G C C T C A A A									18rs21_all.seq
501	T C T G A C T C T T C T A A T A A A T G A T T G A T G A C T T G T T G G C A A C T A G C C T C A A A									cohl_all.seq
500	T C T G A C T C T T C T A A T A A A T G A T T G A T G G C T T G T T G G C A A C T A G C C T C A A A									cjb111_all.seq
501	T C T G A C T C T T C T A A T A A A T G A T T G A T G G C T T G T T G G C A A C T A G C C T C A A A									nea316_all.seq
501	T C T G A C T C T T C T A A T A A A T G A T T G A T G G C T T G T T G G C A A C T A G C C T C A A A									a909_all.seq
C T G T G T T T G C A A A A A G G C A T C G A T A C A C A A G A A G A C T A C G T A T A C T G G Majority										
1560		1570		1580		1590		1600		
550	C T G T G T T T G C A A A A A G G C A T C G A T A C A C A A G A A G A C T A C G T A T A C T G G									2603_all.seq
319	C T G T G T T T G C A A A A A G G C A T C G A T A C A C A A G A A G A C T A C G T A T A C T G G									18rs21_all.seq
551	C T G T G T T T G C A A A A A G G C A T C G A T A C A C A A G A A G A C T A C G T A T A C T G G									cohl_all.seq
550	C T G T G T T T G C A A A A A G G C A T C G A T A C A C A A G A A G A C T A C G T A T A C T G G									cjb111_all.seq
551	C T G T G T T T G C A A A A A G G C A T C G A T A C A C A A G A A G A C T A C G T A T A C T G G									nea316_all.seq
551	C T G T G T T T G C A A A A A G G C A T C G A T A C A C A A G A A G A C T A C G T A T A C T G G									a909_all.seq
T A G T A G G A A A A C A A G G G A C A A G C T T T A T A T A G G A T A A G A T T T C T T T T T T A Majority										
1610		1620		1630		1640		1650		
300	T A G T A G G A A A A C A A G G G A C A A G C T T T A T A T A G G A T A A G A T T T C T T T T T T A									2603_all.seq
169	T A G T A G G A A A A C A A G G G A C A A G C T T T A T A T A G G A T A A G A T T T C T T T T T T A									18rs21_all.seq
301	T A G T A G G A A A A C A A G G G A C A A G C T T T A T A T A G G A T A A G A T T T C T T T T T T A									cohl_all.seq
300	T A G T A G G A A A A C A A G G G A C A A G C T T T A T A T A G G A T A A G A T T T C T T T T T T A									cjb111_all.seq
301	T A G T A G G A A A A C A A G G G A C A A G C T T T A T A T A G G A T A A G A T T T C T T T T T T A									nea316_all.seq
301	T A G T A G G A A A A C A A G G G A C A A G C T T T A T A T A G G A T A A G A T T T C T T T T T T A									a909_all.seq
C T A C G A T G A G A A A A T T G T T C T A G A A A G C G A C T G G A T A A C T G T T C T T G C C T Majority										
1660		1670		1680		1690		1700		
150	T T A C C G A T G A G A A A A T T G T T C T A G A A A G C G A C T G G A T A A C T G T T C T T G C C T									2603_all.seq
119	C T A C G A T G A G A A A A T T G T T C T A G A A A G C G A C T G G A T A A C T G T T C T T G C C T									18rs21_all.seq
151	C T A C G A T G A G A A A A T T G T T C T A G A A A G C G A C T G G A T A A C T G T T C T T G C C T									cohl_all.seq
150	C T A C G A T G A G A A A A T T G T T C T A G A A A G C G A C T G G A T A A C T G T T C T T G C C T									cjb111_all.seq
151	C T A C G A T G A G A A A A T T G T T C T A G A A A G C G A C T G G A T A A C T G T T C T T G C C T									nea316_all.seq
151	C T A C G A T G A G A A A A T T G T T C T A G A A A G C G A C T G G A T A A C T G T T C T T G C C T									a909_all.seq
A T T G A T A T C A G G G C T A T A G G G A T A A A A T G C T C C A A T A G C A A T A A G A T A T T Majority										
1710		1720		1730		1740		1750		
00	A T T G A T A T C A G G G C T A T A G G G A T A A A A T G C T C C A A T A G C A A T A A G A T A T T									2603_all.seq
169	A T T G A T A T C A G G G C T A T A G G G A T A A A A T G C T C C A A T A G C A A T A A G A T A T T									18rs21_all.seq
01	A T T G A T A T C A G G G C T A T A G G G A T A A A A T G C T C C A A T A G C A A T A A G A T A T T									cohl_all.seq
00	A T T G A T A T C A G G G C T A T A G G G A T A A A A T G C T C C A A T A G C A A T A A G A T A T T									cjb111_all.seq
01	A T T G A T A T C A G G G C T A T A G G G A T A A A A T G C T C C A A T A G C A A T A A G A T A T T									nea316_all.seq
01	A T T G A T A T C A G G G C T A T A G G G A T A A A A T G C T C C A A T A G C A A T A A G A T A T T									a909_all.seq

FIGURE 18 D

23/487

G A C A G A C A G G A A A A T T A A G A A T G A T T C T T C A A A A A G A C C C T C A T A A A C A Majority										
1760		1770		1780		1790		1800		
750	G A C A G A C A G G A A A A T T A A G A A T G A T T C T T C A A A A A G A C C C T C A T A A A C A									2603_all.seq
519	G A C A G A C A G G A A A A T T A A G A A T G A T T C T T C A A A A A G A C C C T C A T A A A C A									18rs21_all.seq
751	G A C A G A C A G G A A A A T T A A G A A T G A T T C T T C A A A A A G A C C C T C A T A A A C A									coh1_all.seq
750	G A C A G A C A G G A A A A T T A A G A A T G A T T C T T C A A A A A G A C C C T C A T A A A C A									cjb111_all.seq
751	G A C A G A C A G G A A A A T T A A G A A T G A T T C T T C A A A A A G A C C C T C A T A A A C A									nem316_all.seq
751	G A C A G A C A G G A A A A T T A A G A A T G A T T C T T C A A A A A G A C C C T C A T A A A C A									a909_all.seq
G T G A T A T C T T G G T T A T A A G G G A T A G C T A A A T G T T T T A A A A A C T G A T A C T A Majority										
1810		1820		1830		1840		1850		
800	G T G A T A T C T T G G T T A T A A G G G A T A G C T A A A T G T T T T A A A A A C T G A T A C T A									2603_all.seq
569	G T G A T A T C T T G G T T A T A A G G G A T A G C T A A A T G T T T T A A A A A C T G A T A C T A									18rs21_all.seq
801	G T G A T A T C T T G G T T A T A A G G G A T A G C T A A A T G T T T T A A A A A C T G A T A C T A									coh1_all.seq
800	G T G A T A T C T T G G T T A T A A G G G A T A G C T A A A T G T T T T A A A A A C T G A T A C T A									cjb111_all.seq
801	G T G A T A T C T T G G T T A T A A G G G A T A G C T A A A T G T T T T A A A A A C T G A T A C T A									nem316_all.seq
801	G T G A T A T C T T G G T T A T A A G G G A T A G C T A A A T G T T T T A A A A A C T G A T A C T A									a909_all.seq
A G G C A A C A G A T A G T C T T C G T T A C C A T A T A A C T G A A C G A G T T C C T T G T C T C Majority										
1860		1870		1880		1890		1900		
850	A G G C A A C A G A T A G T C T T C G T T A C C A T A T A A C T G A A C G A G T T C C T T G T C T C									2603_all.seq
619	A G G C A A C A G A T A G T C T T C G T T A C C A T A T A A C T G A A C G A G T T C C T T G T C T C									18rs21_all.seq
851	A G G C A A C A G A T A G T C T T C G T T A C C A T A T A A C T G A A C G A G T T C C T T G T C T C									coh1_all.seq
850	A G G C A A C A G A T A G T C T T C G T T A C C A T A T A A C T G A A C G A G T T C C T T G T C T C									cjb111_all.seq
851	A G G C A A C A G A T A G T C T T C G T T A C C A T A T A A C T G A A C G A G T T C C T T G T C T C									nem316_all.seq
851	A G G C A A C A G A T A G T C T T C G T T A C C A T A T A A C T G A A C G A G T T C C T T G T C T C									a909_all.seq
G T G A C A T C A C T G A A A T A G G T A G T T G A G A T A T G G T A T G C A A T G T T T G A A C A Majority										
1910		1920		1930		1940		1950		
900	G T G A C A T C A C T G A A A T A G G T A G T T G A G A T A T G G T A T G C A A T G T T T G A A C A									2603_all.seq
669	G T G A C A T C A C T G A A A T A G G T A G T T G A G A T A T G G T A T G C A A T G T T T G A A C A									18rs21_all.seq
901	G T G A C A T C A C T G A A A T A G G T A G T T G A G A T A T G G T A T G C A A T G T T T G A A C A									coh1_all.seq
900	G T G A C A T C A C T G A A A T A G G T A G T T G A G A T A T G G T A T G C A A T G T T T G A A C A									cjb111_all.seq
901	G T G A C A T C A C T G A A A T A G G T A G T T G A G A T A T G G T A T G C A A T G T T T G A A C A									nem316_all.seq
901	G T G A C A T C A C T G A A A T A G G T A G T T G A G A T A T G G T A T G C A A T G T T T G A A C A									a909_all.seq
T G T T T A A A A T C G A A T G T A A C C A T T T G A T A G A C C G C C T T C A T T A T C A T T T C Majority										
1960		1970		1980		1990		2000		
950	T G T T T A A A A T C G A A T G T A A C C A T T T G A T A G A C C G C C T T C A T T A T C A T T T C									2603_all.seq
719	T G T T T A A A A T C G A A T G T A A C C A T T T G A T A G A C C G C C T T C A T T A T C A T T T C									18rs21_all.seq
951	T G T T T A A A A T C G A A T G T A A C C A T T T G A T A G A C C G C C T T C A T T A T C A T T T C									coh1_all.seq
950	T G T T T A A A A T C G A A T G T A A C C A T T T G A T A G A C C G C C T T C A T T A T C A T T T C									cjb111_all.seq
951	T G T T T A A A A T C G A A T G T A A C C A T T T G A T A G A C C G C C T T C A T T A T C A T T T C									nem316_all.seq
951	T G T T T A A A A T C G A A T G T A A C C A T T T G A T A G A C C G C C T T C A T T A T C A T T T C									a909_all.seq
T A G A A T T T T T C T T T A G G T T T G T A A A G A C T A C A A A A T A A A A T G A T G A A A A C Majority										
2010		2020		2030		2040		2050		
300	T A G A A T T T T T C T T T A G G T T T G T A A A G A C T A C A A A A T A A A A T G A T G A A A A C									2603_all.seq
769	T A G A A T T T T T C T T T A G G T T T G T A A A G A C T A C A A A A T A A A A T G A T G A A A A C									18rs21_all.seq
301	T A G A A T T T T T C T T T A G G T T T G T A A A G A C T A C A A A A T A A A A T G A T G A A A A C									coh1_all.seq
300	T A G A A T T T T T C T T T A G G T T T G T A A A G A C T A C A A A A T A A A A T G A T G A A A A C									cjb111_all.seq
301	T A G A A T T T T T C T T T A G G T T T G T A A A G A C T A C A A A A T A A A A T G A T G A A A A C									nem316_all.seq
301	T A G A A T T T T T C T T T A G G T T T G T A A A G A C T A C A A A A T A A A A T G A T G A A A A C									a909_all.seq
A A C T A T C T T G T G G A T A C A C T A A A A A G A C A C G C T A A T T A G C A A A C T C T C T C Majority										
2060		2070		2080		2090		2100		
350	A A C T A T C T T G T G G A T A C A C T A A A A A G A C A C G C T A A T T A G C A A A C T C T C T C									2603_all.seq
319	A A C T A T C T T G T G G A T A C A C T A A A A A G A C A C G C T A A T T A G C A A A C T C T C T C									18rs21_all.seq
351	A A C T A T C T T G T G G A T A C A C T A A A A A G A C A C G C T A A T T A G C A A A C T C T C T C									coh1_all.seq
350	A A C T A T C T T G T G G A T A C A C T A A A A A G A C A C G C T A A T T A G C A A A C T C T C T C									cjb111_all.seq
351	A A C T A T C T T G T G G A T A C A C T A A A A A G A C A C G C T A A T T A G C A A A C T C T C T C									nem316_all.seq
351	A A C T A T C T T G T G G A T A C A C T A A A A A G A C A C G C T A A T T A G C A A A C T C T C T C									a909_all.seq

FIGURE 18 E

24/487

TTCATCATCTCTCACCATTATTATACTACTATTTTATATGACAAATAAAGG Majority											
		2110		2120		2130		2140		2150	
2100	TTCATCATCTCTCTCACCATTATTATTATACTACTATTTTATATGACAAATAAAGG	2603_all.seq									
1869	TTCATCATCTCTCTCACCATTATTATTATACTACTATTTTATATGACAAATAAAGG	18rs21_all.seq									
2101	TTCATCATCTCTCTCACCATTATTATTATACTACTATTTTATATGACAAATAAAGG	cohl1_all.seq									
2100	TTCATCATCTCTCTCACCATTATTATTATACTACTATTTTATATGACAAATAAAGG	cjb111_all.seq									
2101	TTCATCATCTCTCTCACCATTATTATTATACTACTATTTTATATGACAAATAAAGG	nem316_all.seq									
2101	TTCATCATCTCTCTCACCATTATTATTATACTACTATTTTATATGACAAATAAAGG	a909_all.seq									
TGATTTTGTAAATAATACTTTGAAAATCCACATATATTTTAAATCTT Majority											
		2160		2170		2180		2190		2200	
2150	TGATTTTGTAAATAATACTTTGAAAATCCACATATATTTTAAATCTT	2603_all.seq									
1919	TGATTTTGTAAATAATACTTTGAAAATCCACATATATTTTAAATCTT	18rs21_all.seq									
2151	TGATTTTGTAAATAATACTTTGAAAATCCACATATATTTTAAATCTT	cohl1_all.seq									
2150	TGATTTTGTAAATAATACTTTGAAAATCCACATATATTTTAAATCTT	cjb111_all.seq									
2151	TGATTTTGTAAATAATACTTTGAAAATCCACATATATTTTAAATCTT	nem316_all.seq									
2151	TGATTTTGTAAATAATACTTTGAAAATCCACATATATTTTAAATCTT	a909_all.seq									
CCGCTCTGAAAAAA-TAAATAAAAAATAGTAAAAAATAAACACGAATTTAAAAA Majority											
		2210		2220		2230		2240		2250	
2199	CCGCTCTGAAAAAA-TAAATAAAAAATAGTAAAAAATAAACACGAATTTAAAAA	2603_all.seq									
1968	CCGCTCTGAAAAAA-TAAATAAAAAATAGTAAAAAATAAACACGAATTTAAAAA	18rs21_all.seq									
2200	CCGCTCTGAAAAAA-TAAATAAAAAATAGTAAAAAATAAACACGAATTTAAAAA	cohl1_all.seq									
2200	CCGCTCTGAAAAAA-TAAATAAAAAATAGTAAAAAATAAACACGAATTTAAAAA	cjb111_all.seq									
2201	CCGCTCTGAAAAAA-TAAATAAAAAATAGTAAAAAATAAACACGAATTTAAAAA	nem316_all.seq									
2201	CCGCTCTGAAAAAA-TAAATAAAAAATAGTAAAAAATAAACACGAATTTAAAAA	a909_all.seq									
TAAGCAAATTTTAAAGAAAATCTGTGCTAAACTTTAATAGTTTTGTGCT Majority											
		2260		2270		2280		2290		2300	
248	TAAGCAAATTTTAAAGAAAATCTGTGCTAAACTTTAATAGTTTTGTGCT	2603_all.seq									
2017	TAAGCAAATTTTAAAGAAAATCTGTGCTAAACTTTAATAGTTTTGTGCT	18rs21_all.seq									
249	TAAGCAAATTTTAAAGAAAATCTGTGCTAAACTTTAATAGTTTTGTGCT	cohl1_all.seq									
249	TAAGCAAATTTTAAAGAAAATCTGTGCTAAACTTTAATAGTTTTGTGCT	cjb111_all.seq									
251	TAAGCAAATTTTAAAGAAAATCTGTGCTAAACTTTAATAGTTTTGTGCT	nem316_all.seq									
250	TAAGCAAATTTTAAAGAAAATCTGTGCTAAACTTTAATAGTTTTGTGCT	a909_all.seq									
TAATAATAATCAGCACTTACAAAGAAACAAAGGGGAAAGCGAGGAGAGAGAAC Majority											
		2310		2320		2330		2340		2350	
298	TAATAATAATCAGCACTTACAAAGAAACAAAGGGGAAAGCGAGGAGAGAGAAC	2603_all.seq									
067	TAATAATAATCAGCACTTACAAAGAAACAAAGGGGAAAGCGAGGAGAGAGAAC	18rs21_all.seq									
299	TAATAATAATCAGCACTTACAAAGAAACAAAGGGGAAAGCGAGGAGAGAGAAC	cohl1_all.seq									
299	TAATAATAATCAGCACTTACAAAGAAACAAAGGGGAAAGCGAGGAGAGAGAAC	cjb111_all.seq									
301	TAATAATAATCAGCACTTACAAAGAAACAAAGGGGAAAGCGAGGAGAGAGAAC	nem316_all.seq									
300	TAATAATAATCAGCACTTACAAAGAAACAAAGGGGAAAGCGAGGAGAGAGAAC	a909_all.seq									
TTTTAATGAAATTATCGAAGAAGTTATTGTTTTTCGGCTGCTGTTTTTAAACA Majority											
		2360		2370		2380		2390		2400	
348	TTTTAATGAAATTATCGAAGAAGTTATTGTTTTTCGGCTGCTGTTTTTAAACA	2603_all.seq									
117	TTTTAATGAAATTATCGAAGAAGTTATTGTTTTTCGGCTGCTGTTTTTAAACA	18rs21_all.seq									
349	TTTTAATGAAATTATCGAAGAAGTTATTGTTTTTCGGCTGCTGTTTTTAAACA	cohl1_all.seq									
349	TTTTAATGAAATTATCGAAGAAGTTATTGTTTTTCGGCTGCTGTTTTTAAACA	cjb111_all.seq									
351	TTTTAATGAAATTATCGAAGAAGTTATTGTTTTTCGGCTGCTGTTTTTAAACA	nem316_all.seq									
350	TTTTAATGAAATTATCGAAGAAGTTATTGTTTTTCGGCTGCTGTTTTTAAACA	a909_all.seq									
ATCGTGGCGGGCTCAACTGTTGAACCACTAGCTCAGTTTCCGACTCGGAAT Majority											
		2410		2420		2430		2440		2450	
398	ATCGTGGCGGGCTCAACTGTTGAACCACTAGCTCAGTTTCCGACTCGGAAT	2603_all.seq									
167	ATCGTGGCGGGCTCAACTGTTGAACCACTAGCTCAGTTTCCGACTCGGAAT	18rs21_all.seq									
399	ATCGTGGCGGGCTCAACTGTTGAACCACTAGCTCAGTTTCCGACTCGGAAT	cohl1_all.seq									
399	ATCGTGGCGGGCTCAACTGTTGAACCACTAGCTCAGTTTCCGACTCGGAAT	cjb111_all.seq									
401	ATCGTGGCGGGCTCAACTGTTGAACCACTAGCTCAGTTTCCGACTCGGAAT	nem316_all.seq									
400	ATCGTGGCGGGCTCAACTGTTGAACCACTAGCTCAGTTTCCGACTCGGAAT	a909_all.seq									

FIGURE 18 F

25/487

C A G T A T T G T A A C A G C T G C C A G A A C G C C C A G C G A A A A C A A Majority											
		2460		2470		2480		2490		2500	
2448		C A G T A T T G T A A C A G C T G C C A G A A G T G T C A C A A G A A C G C C C A G C G A A A A C A A 2603_all.seq									
2217		C A G T A T T G T A A G A C C T G C C A G A A G T G T C A C A A G A A C G C C C A G C G A A A A C A A 18rs21_all.seq									
2449		C A G T A T T G T A A G A C C T G C C A G A A G T G T C A C A A G A A C G C C C A G C G A A A A C A A coh1_all.seq									
2449		C A G T A T T G T A A G A C C T G C C A G A A G T G T C A C A A G A A C G C C C A G C G A A A A C A A cjb111_all.seq									
2451		C A G T A T T G T A A G A C C T G C C A G A A G T G T C A C A A G A A C G C C C A G C G A A A A C A A nem316_all.seq									
2450		C A G T A T T G T A A G A C C T G C C A G A A G T G T C A C A A G A A C G C C C A G C G A A A A C A A a909_all.seq									
C A G T A A A T A T C T A T A A A T T A C A A G C T G A T A G T T A T A A A T C G G A A A T T A C T Majority											
		2510		2520		2530		2540		2550	
2498		C A G T A A A T A T C T A T A A A T T A C A A G C T G A T A G T T A T A A A T C G G A A A T T A C T 2603_all.seq									
2267		C A G T A A A T A T C T A T A A A T T A C A A G C T G A T A G T T A T A A A T C G G A A A T T A C T 18rs21_all.seq									
2499		C A G T A A A T A T C T A T A A A T T A C A A G C T G A T A G T T A T A A A T C G G A A A T T A C T coh1_all.seq									
2499		C A G T A A A T A T C T A T A A A T T A C A A G C T G A T A G T T A T A A A T C G G A A A T T A C T cjb111_all.seq									
2501		C A G T A A A T A T C T A T A A A T T A C A A G C T G A T A G T T A T A A A T C G G A A A T T A C T nem316_all.seq									
2500		C A G T A A A T A T C T A T A A A T T A C A A G C T G A T A G T T A T A A A T C G G A A A T T A C T a909_all.seq									
T C T A A T G C T G C T A T C G A G A A T A A A G A C G C C G A A G T A A T A T C T A A C T A T G C Majority											
		2560		2570		2580		2590		2600	
2548		T C T A A T G C T G C T A T C G A G A A T A A A G A C G C C G A A G T A A T A T C T A A C T A T G C 2603_all.seq									
2317		T C T A A T G C T G C T A T C G A G A A T A A A G A C G C C G A A G T A A T A T C T A A C T A T G C 18rs21_all.seq									
2549		T C T A A T G C T G C T A T C G A G A A T A A A G A C G C C G A A G T A A T A T C T A A C T A T G C coh1_all.seq									
2549		T C T A A T G C T G C T A T C G A G A A T A A A G A C G C C G A A G T A A T A T C T A A C T A T G C cjb111_all.seq									
2551		T C T A A T G C T G C T A T C G A G A A T A A A G A C G C C G A A G T A A T A T C T A A C T A T G C nem316_all.seq									
2550		T C T A A T G C T G C T A T C G A G A A T A A A G A C G C C G A A G T A A T A T C T A A C T A T G C a909_all.seq									
T A A A C T T G C T G A C A A T G T A A A A G C T T T G C A A G G T G T A C A G T T T A A A C G T T Majority											
		2610		2620		2630		2640		2650	
598		T A A A C T T G C T G A C A A T G T A A A A G C T T T G C A A G G T G T A C A G T T T A A A C G T T 2603_all.seq									
367		T A A A C T T G C T G A C A A T G T A A A A G C T T T G C A A G G T G T A C A G T T T A A A C G T T 18rs21_all.seq									
599		T A A A C T T G C T G A C A A T G T A A A A G C T T T G C A A G G T G T A C A G T T T A A A C G T T coh1_all.seq									
599		T A A A C T T G C T G A C A A T G T A A A A G C T T T G C A A G G T G T A C A G T T T A A A C G T T cjb111_all.seq									
601		T A A A C T T G C T G A C A A T G T A A A A G C T T T G C A A G G T G T A C A G T T T A A A C G T T nem316_all.seq									
600		T A A A C T T G C T G A C A A T G T A A A A G C T T T G C A A G G T G T A C A G T T T A A A C G T T a909_all.seq									
A T A A A G T C A A G A C G C A T A T T T C T G T T G A T G A A T T G A A A A A T T G A C A A C A Majority											
		2660		2670		2680		2690		2700	
648		A T A A A G T C A A G A C G C A T A T T T C T G T T G A T G A A T T G A A A A A T T G A C A A C A 2603_all.seq									
417		A T A A A G T C A A G A C G C A T A T T T C T G T T G A T G A A T T G A A A A A T T G A C A A C A 18rs21_all.seq									
649		A T A A A G T C A A G A C G C A T A T T T C T G T T G A T G A A T T G A A A A A T T G A C A A C A coh1_all.seq									
549		A T A A A G T C A A G A C G C A T A T T T C T G T T G A T G A A T T G A A A A A T T G A C A A C A cjb111_all.seq									
351		A T A A A G T C A A G A C G C A T A T T T C T G T T G A T G A A T T G A A A A A T T G A C A A C A nem316_all.seq									
350		A T A A A G T C A A G A C G C A T A T T T C T G T T G A T G A A T T G A A A A A T T G A C A A C A a909_all.seq									
G T T G A A G C A G C A G A T G C A A A A G T T G C A A C G A T T C T T G A A C A A G G T G T C A G Majority											
		2710		2720		2730		2740		2750	
198		G T T G A A G C A G C A G A T G C A A A A G T T G C A A C G A T T C T T G A A C A A G G T G T C A G 2603_all.seq									
167		G T T G A A G C A G C A G A T G C A A A A G T T G C A A C G A T T C T T G A A C A A G G T G T C A G 18rs21_all.seq									
199		G T T G A A G C A G C A G A T G C A A A A G T T G C A A C G A T T C T T G A A C A A G G T G T C A G coh1_all.seq									
199		G T T G A A G C A G C A G A T G C A A A A G T T G C A A C G A T T C T T G A A C A A G G T G T C A G cjb111_all.seq									
101		G T T G A A G C A G C A G A T G C A A A A G T T G C A A C G A T T C T T G A A C A A G G T G T C A G nem316_all.seq									
100		G T T G A A G C A G C A G A T G C A A A A G T T G C A A C G A T T C T T G A A C A A G G T G T C A G a909_all.seq									
T C T A C C T C A A A A A A C T A A T G C T C A A G C T T T G C T C G T C G A T G C T C T C G A T T Majority											
		2760		2770		2780		2790		2800	
48		T C T A C C T C A A A A A A C T A A T G C T C A A G C T T T G C T C G T C G A T G C T C T C G A T T 2603_all.seq									
117		T C T A C C T C A A A A A A C T A A T G C T C A A G C T T T G C T C G T C G A T G C T C T C G A T T 18rs21_all.seq									
49		T C T A C C T C A A A A A A C T A A T G C T C A A G C T T T G C T C G T C G A T G C T C T C G A T T coh1_all.seq									
49		T C T A C C T C A A A A A A C T A A T G C T C A A G C T T T G C T C G T C G A T G C T C T C G A T T cjb111_all.seq									
51		T C T A C C T C A A A A A A C T A A T G C T C A A G C T T T G C T C G T C G A T G C T C T C G A T T nem316_all.seq									
50		T C T A C C T C A A A A A A C T A A T G C T C A A G C T T T G C T C G T C G A T G C T C T C G A T T a909_all.seq									

FIGURE 18 G

FIGURE 18 H

27/487

ATTGCTTCGATAAAACACTGAATAGAGATGAGCACTACACTATTGATGAACC Majority									
3160		3170		3180		3190		3200	
148	ATTGCTTCGATAAAACACTGAATAGAGATGAGCACTACACTATTGATGAACC	2603_all.seq							
917	ATTGCTTCGATAAAACACTGAATAGAGATGAGCACTACACTATTGATGAACC	18rs21_all.seq							
149	ATTGCTTCGATAAAACACTGAATAGAGATGAGCACTACACTATTGATGAACC	cohl1_all.seq							
149	ATTGCTTCGATAAAACACTGAATAGAGATGAGCACTACACTATTGATGAACC	cjb111_all.seq							
151	ATTGCTTCGATAAAACACTGAATAGAGATGAGCACTACACTATTGATGAACC	nem316_all.seq							
150	ATTGCTTCGATAAAACACTGAATAGAGATGAGCACTACACTATTGATGAACC	a909_all.seq							
AACAGTTGATAAACCAAAATACATTAAAAATTACGTTTAAACCAGAGAAAT Majority									
3210		3220		3230		3240		3250	
198	AACAGTTGATAAACCAAAATACATTAAAAATTACGTTTAAACCAGAGAAAT	2603_all.seq							
967	AACAGTTGATAAACCAAAATACATTAAAAATTACGTTTAAACCAGAGAAAT	18rs21_all.seq							
199	AACAGTTGATAAACCAAAATACATTAAAAATTACGTTTAAACCAGAGAAAT	cohl1_all.seq							
199	AACAGTTGATAAACCAAAATACATTAAAAATTACGTTTAAACCAGAGAAAT	cjb111_all.seq							
201	AACAGTTGATAAACCAAAATACATTAAAAATTACGTTTAAACCAGAGAAAT	nem316_all.seq							
200	AACAGTTGATAAACCAAAATACATTAAAAATTACGTTTAAACCAGAGAAAT	a909_all.seq							
TTAAAGAAATTGCTGAGCTACTTAAAGCAATGACCCCTTGTTAAAAATCAA Majority									
3260		3270		3280		3290		3300	
248	TTAAAGAAATTGCTGAGCTACTTAAAGCAATGACCCCTTGTTAAAAATCAA	2603_all.seq							
217	TTAAAGAAATTGCTGAGCTACTTAAAGCAATGACCCCTTGTTAAAAATCAA	18rs21_all.seq							
249	TTAAAGAAATTGCTGAGCTACTTAAAGCAATGACCCCTTGTTAAAAATCAA	cohl1_all.seq							
249	TTAAAGAAATTGCTGAGCTACTTAAAGCAATGACCCCTTGTTAAAAATCAA	cjb111_all.seq							
251	TTAAAGAAATTGCTGAGCTACTTAAAGCAATGACCCCTTGTTAAAAATCAA	nem316_all.seq							
250	TTAAAGAAATTGCTGAGCTACTTAAAGCAATGACCCCTTGTTAAAAATCAA	a909_all.seq							
GATGCTCTTGATAAAGCTACTGCAAAATACAGATGATCGCGCATTTTTTGA Majority									
3310		3320		3330		3340		3350	
298	GATGCTCTTGATAAAGCTACTGCAAAATACAGATGATCGCGCATTTTTTGA	2603_all.seq							
267	GATGCTCTTGATAAAGCTACTGCAAAATACAGATGATCGCGCATTTTTTGA	18rs21_all.seq							
299	GATGCTCTTGATAAAGCTACTGCAAAATACAGATGATCGCGCATTTTTTGA	cohl1_all.seq							
299	GATGCTCTTGATAAAGCTACTGCAAAATACAGATGATCGCGCATTTTTTGA	cjb111_all.seq							
301	GATGCTCTTGATAAAGCTACTGCAAAATACAGATGATCGCGCATTTTTTGA	nem316_all.seq							
300	GATGCTCTTGATAAAGCTACTGCAAAATACAGATGATCGCGCATTTTTTGA	a909_all.seq							
AATTCCAGTTGCAATCAACTATTAAATGAAAAAGCAGTTTTTAGGAAAAAGCAA Majority									
3360		3370		3380		3390		3400	
48	AATTCCAGTTGCAATCAACTATTAAATGAAAAAGCAGTTTTTAGGAAAAAGCAA	2603_all.seq							
17	AATTCCAGTTGCAATCAACTATTAAATGAAAAAGCAGTTTTTAGGAAAAAGCAA	18rs21_all.seq							
49	AATTCCAGTTGCAATCAACTATTAAATGAAAAAGCAGTTTTTAGGAAAAAGCAA	cohl1_all.seq							
49	AATTCCAGTTGCAATCAACTATTAAATGAAAAAGCAGTTTTTAGGAAAAAGCAA	cjb111_all.seq							
51	AATTCCAGTTGCAATCAACTATTAAATGAAAAAGCAGTTTTTAGGAAAAAGCAA	nem316_all.seq							
50	AATTCCAGTTGCAATCAACTATTAAATGAAAAAGCAGTTTTTAGGAAAAAGCAA	a909_all.seq							
TTGAAAAATACTTTTGAACCTTCAATATGACCATACTCCTGATAAAGCTGAC Majority									
3410		3420		3430		3440		3450	
98	TTGAAAAATACTTTTGAACCTTCAATATGACCATACTCCTGATAAAGCTGAC	2603_all.seq							
67	TTGAAAAATACTTTTGAACCTTCAATATGACCATACTCCTGATAAAGCTGAC	18rs21_all.seq							
99	TTGAAAAATACTTTTGAACCTTCAATATGACCATACTCCTGATAAAGCTGAC	cohl1_all.seq							
99	TTGAAAAATACTTTTGAACCTTCAATATGACCATACTCCTGATAAAGCTGAC	cjb111_all.seq							
01	TTGAAAAATACTTTTGAACCTTCAATATGACCATACTCCTGATAAAGCTGAC	nem316_all.seq							
00	TTGAAAAATACTTTTGAACCTTCAATATGACCATACTCCTGATAAAGCTGAC	a909_all.seq							
AATCCAAAAACCATCTAATCCTCCAAGAAAAACAGAAAGTTTCATACTGGTGG Majority									
3460		3470		3480		3490		3500	
48	AATCCAAAAACCATCTAATCCTCCAAGAAAAACAGAAAGTTTCATACTGGTGG	2603_all.seq							
17	AATCCAAAAACCATCTAATCCTCCAAGAAAAACAGAAAGTTTCATACTGGTGG	18rs21_all.seq							
49	AATCCAAAAACCATCTAATCCTCCAAGAAAAACAGAAAGTTTCATACTGGTGG	cohl1_all.seq							
49	AATCCAAAAACCATCTAATCCTCCAAGAAAAACAGAAAGTTTCATACTGGTGG	cjb111_all.seq							
51	AATCCAAAAACCATCTAATCCTCCAAGAAAAACAGAAAGTTTCATACTGGTGG	nem316_all.seq							
50	AATCCAAAAACCATCTAATCCTCCAAGAAAAACAGAAAGTTTCATACTGGTGG	a909_all.seq							

FIGURE 18 I

28/487

G A A A C C G A T T T G T A A A G A A A G A C T C A A C A A A C A C A A A C A C T A G G T G G T G Majority											
		3510		3520		3530		3540		3550	
1498		G A A A C C A T T T T G T A A A G A A A G A C T C A A C A G A A A C A C A A A C A C T A G G T G G T G 2603_ail.seq									
1267		G A A A C C G A T T T T G T A A A G A A A G A C T C A A C A G A A A C A C A A A C A C T A G G T G G T G 18rs21_ail.seq									
1499		G A A A C C G A T T T T G T A A A G A A A G A C T C A A C A G A A A C A C A A A C A C T A G G T G G T G coh1_ail.seq									
1499		G A A A C C G A T T T T G T A A A G A A A G A C T C A A C A G A A A C A C A A A C A C T A G G T G G T G cjb111_ail.seq									
1501		G A A A C C G A T T T T G T A A A G A A A G A C T C A A C A G A A A C A C A A A C A C T A G G T G G T G nem316_ail.seq									
1500		G A A A C C G A T T T T G T A A A G A A A G A C T C A A C A G A A A C A C A A A C A C T A G G T G G T G a909_ail.seq									
C T G A G T T T G A T T T G T T G G C T T C T G A T G G G A C A G C A G T A A A A T G G A C A G A T Majority											
		3560		3570		3580		3590		3600	
1548		C T G A G T T T G A T T T G T T G G C T T C T G A T G G G A C A G C A G T A A A A T G G A C A G A T 2603_ail.seq									
1317		C T G A G T T T G A T T T G T T G G C T T C T G A T G G G A C A G C A G T A A A A T G G A C A G A T 18rs21_ail.seq									
1549		C T G A G T T T G A T T T G T T G C T T C T G A T G G G A C A G C A G T A A A A T G G A C A G A T coh1_ail.seq									
1549		C T G A G T T T G A T T T G T T G C T T C T G A T G G G A C A G C A G T A A A A T G G A C A G A T cjb111_ail.seq									
1551		C T G A G T T T G A T T T G T T G C C T T C T G A T G G G A C A G C A G T A A A A T G G A C A G A T nem316_ail.seq									
1550		C T G A G T T T G A T T T G T T G C C T T C T G A T G G G A C A G C A G T A A A A T G G A C A G A T a909_ail.seq									
G C T C T T A T T A A A G C C G A A T A C T A A T A A A A A C T A T A T T G C T G G A G A A G C T G T Majority											
		3610		3620		3630		3640		3650	
598		G C T C T T A T T A A A G C C G A A T A C T A A T A A A A A C T A T A T T G C T G G A G A A G C T G T 2603_ail.seq									
367		G C T C T T A T T A A A G C C G A A T A C T A A T A A A A A C T A T A T T G C T G G A G A A G C T G T 18rs21_ail.seq									
599		G C T C T T A T T A A A G C C G A A T A C T A A T A A A A A C T A T A T T G C T G G A G A A G C T G T coh1_ail.seq									
599		G C T C T T A T T A A A G C C G A A T A C T A A T A A A A A C T A T A T T G C T G G A G A A G C T G T cjb111_ail.seq									
601		G C T C T T A T T A A A G C C G A A T A C T A A T A A A A A C T A T A T T G C T G G A G A A G C T G T nem316_ail.seq									
600		G C T C T T A T T A A A G C C G A A T A C T A A T A A A A A C T A T A T T G C T G G A G A A G C T G T a909_ail.seq									
T A C T G G G C A A C C A A T C A A A T T G A A A T C A C A T A C A G A C G G T A C G T T T G A G A Majority											
		3660		3670		3680		3690		3700	
648		T A C T G G G C A A C C A A T C A A A T T G A A A T C A C A T A C A G A C G G T A C G T T T G A G A 2603_ail.seq									
417		T A C T G G G C A A C C A A T C A A A T T G A A A T C A C A T A C A G A C G G T A C G T T T G A G A 18rs21_ail.seq									
649		T A C T G G G C A A C C A A T C A A A T T G A A A T C A C A T A C A G A C G G T A C G T T T G A G A coh1_ail.seq									
649		T A C T G G G C A A C C A A T C A A A T T G A A A T C A C A T A C A G A C G G T A C G T T T G A G A cjb111_ail.seq									
651		T A C T G G G C A A C C A A T C A A A T T G A A A T C A C A T A C A G A C G G T A C G T T T G A G A nem316_ail.seq									
650		T A C T G G G C A A C C A A T C A A A T T G A A A T C A C A T A C A G A C G G T A C G T T T G A G A a909_ail.seq									
T T A A A G G T T T G G C T T A T G C A G T T G A T G C G A A T G C A G A G G G T A C A G C A G T A Majority											
		3710		3720		3730		3740		3750	
598		T T A A A G G T T T G G C T T A T G C A G T T G A T G C G A A T G C A G A G G G T A C A G C A G T A 2603_ail.seq									
467		T T A A A G G T T T G G C T T A T G C A G T T G A T G C G A A T G C A G A G G G T A C A G C A G T A 18rs21_ail.seq									
599		T T A A A G G T T T G G C T T A T G C A G T T G A T G C G A A T G C A G A G G G T A C A G C A G T A coh1_ail.seq									
599		T T A A A G G T T T G G C T T A T G C A G T T G A T G C G A A T G C A G A G G G T A C A G C A G T A cjb111_ail.seq									
701		T T A A A G G T T T G G C T T A T G C A G T T G A T G C G A A T G C A G A G G G T A C A G C A G T A nem316_ail.seq									
700		T T A A A G G T T T G G C T T A T G C A G T T G A T G C G A A T G C A G A G G G T A C A G C A G T A a909_ail.seq									
A C T T A C A A A T T A A A A G A A A C A A A A G C A C C A G A A A G G T T A T G T A A T C C C T G A Majority											
		3760		3770		3780		3790		3800	
748		A C T T A C A A A T T A A A A G A A A C A A A A G C A C C A G A A A G G T T A T G T A A T C C C T G A 2603_ail.seq									
517		A C T T A C A A A T T A A A A G A A A C A A A A G C A C C A G A A A G G T T A T G T A A T C C C T G A 18rs21_ail.seq									
749		A C T T A C A A A T T A A A A G A A A C A A A A G C A C C A G A A A G G T T A T G T A A T C C C T G A coh1_ail.seq									
749		A C T T A C A A A T T A A A A G A A A C A A A A G C A C C A G A A A G G T T A T G T A A T C C C T G A cjb111_ail.seq									
751		A C T T A C A A A T T A A A A G A A A C A A A A G C A C C A G A A A G G T T A T G T A A T C C C T G A nem316_ail.seq									
750		A C T T A C A A A T T A A A A G A A A C A A A A G C A C C A G A A A G G T T A T G T A A T C C C T G A a909_ail.seq									
T A A A G A A A T C C A G T T T A C A G T A T C A C A A A C A T C T T A T A A T A C A A A A C C A A Majority											
		3810		3820		3830		3840		3850	
798		T A A A G A A A T C C A G T T T A C A G T A T C A C A A A C A T C T T A T A A T A C A A A A C C A A 2603_ail.seq									
567		T A A A G A A A T C C A G T T T A C A G T A T C A C A A A C A T C T T A T A A T A C A A A A C C A A 18rs21_ail.seq									
799		T A A A G A A A T C C A G T T T A C A G T A T C A C A A A C A T C T T A T A A T A C A A A A C C A A coh1_ail.seq									
799		T A A A G A A A T C C A G T T T A C A G T A T C A C A A A C A T C T T A T A A T A C A A A A C C A A cjb111_ail.seq									
801		T A A A G A A A T C C A G T T T A C A G T A T C A C A A A C A T C T T A T A A T A C A A A A C C A A nem316_ail.seq									
800		T A A A G A A A T C C A G T T T A C A G T A T C A C A A A C A T C T T A T A A T A C A A A A C C A A a909_ail.seq									

FIGURE 18 J

FIGURE 18 K

30/487

T C A G T T G A C G A T T G T T C A T C T T G A A G C C A A G G C A T A T T G A T C G T C C A A A T C Majority									
4210		4220		4230		4240		4250	
4198	T	C	A	G	T	T	G	A	C
3967	T	C	A	G	T	T	G	A	C
4199	T	C	A	G	T	T	G	A	C
4199	T	C	A	G	T	T	G	A	C
4201	T	C	A	G	T	T	G	A	C
4200	T	C	A	G	T	T	G	A	C
C A C A G T T G G A G A T T G C C C C T A A A G A A G G G A C T C C A A T T G A A G G A G T A C T C Majority									
4260		4270		4280		4290		4300	
4248	C	A	C	A	G	T	T	G	A
4017	C	A	C	A	G	T	T	G	A
4249	C	A	C	A	G	T	T	G	A
4249	C	A	C	A	G	T	T	G	A
4251	C	A	C	A	G	T	T	G	A
4250	C	A	C	A	G	T	T	G	A
T A T C A G T T G T A C C A A T T A A A A T C A A C T G A A G A T G G C G A T T T G T T G G C A C A Majority									
4310		4320		4330		4340		4350	
4298	T	A	T	C	A	G	T	T	G
1067	T	A	T	C	A	G	T	T	G
4299	T	A	T	C	A	G	T	T	G
4299	T	A	T	C	A	G	T	T	G
1301	T	A	T	C	A	G	T	T	G
1300	T	A	T	C	A	G	T	T	G
T T G G A A T T C C C T A A C T A T C A C A G A A T T G A A A A A C A G G C G C A G C A G G T T T Majority									
4360		4370		4380		4390		4400	
1348	T	T	G	G	A	A	T	T	C
1117	T	T	G	G	A	A	T	T	C
1349	T	T	G	G	A	A	T	T	C
1349	T	T	G	G	A	A	T	T	C
1351	T	T	G	G	A	A	T	T	C
1350	T	T	G	G	A	A	T	T	C
T T G A A G C C A C T A C T A A T C A A C A A G G A A A G G C T A C A T T T A A C C A A C T A C C A Majority									
4410		4420		4430		4440		4450	
1398	T	T	G	A	A	G	C	C	A
1167	T	T	G	A	A	G	C	C	A
1399	T	T	G	A	A	G	C	C	A
399	T	T	G	A	A	G	C	C	A
401	T	T	G	A	A	G	C	C	A
400	T	T	G	A	A	G	C	C	A
G A T G G A A T T T A T T A T G C T C T G G C G G T T A A A G C C G G T G A A A A A A A T C G T A A Majority									
4460		4470		4480		4490		4500	
448	G	A	T	G	G	A	A	T	T
217	G	A	T	G	G	A	A	T	T
449	G	A	T	G	G	A	A	T	T
449	G	A	T	G	G	A	A	T	T
451	G	A	T	G	G	A	A	T	T
450	G	A	T	G	G	A	A	T	T
T G T C T C A G C T T T C T T G G T T G A C T T G T C T G A G G A T A A A G T G A T T T A T C C T A Majority									
4510		4520		4530		4540		4550	
498	T	G	T	C	T	C	A	G	C
267	T	G	T	C	T	C	A	G	C
499	T	G	T	C	T	C	A	G	C
499	T	G	T	C	T	C	A	G	C
501	T	G	T	C	T	C	A	G	C
500	T	G	T	C	T	C	A	G	C

FIGURE 18 L

31/487

A A A T C A T C T G G T C C A C A G G T G A G T T G G A C T T G C T T A A A G T T G G T G T G C A T Majority											
		4560		4570		4580		4590		4600	
4548	A A A T C A T C T G G T C C A C A G G T G A G T T G G A C T T G C T T A A A G T T G G T G T G C A T	2603_all.seq									
4317	A A A T C A T C T G G T C C A C A G G T G A G T T G G A C T T G C T T A A A G T T G G T G T G C A T	18rs21_all.seq									
4549	A A A T C A T C T G G T C C A C A G G T G A G T T G G A C T T G C T T A A A G T T G G T G T G C A T	cohl_all.seq									
4549	A A A T C A T C T G G T C C A C A G G T G A G T T G G A C T T G C T T A A A G T T G G T G T G C A T	cjb111_all.seq									
4551	A A A T C A T C T G G T C C A C A G G T G A G T T G G A C T T G C T T A A A G T T G G T G T G C A T	nem316_all.seq									
4550	A A A T C A T C T G G T C C A C A G G T G A G T T G G A C T T G C T T A A A G T T G G T G T G C A T	a909_all.seq									
G G T G A T A C C A A A A A C C A C T A G C A G G C G T T G T C T T T G A A C T T T A T G A A A A Majority											
		4610		4620		4630		4640		4650	
1598	G G T G A T A C C A A A A A C C A C T A G C A G G C G T T G T C T T T G A A C T T T A T G A A A A	2603_all.seq									
1367	G G T G A T A C C A A A A A C C A C T A G C A G G C G T T G T C T T T G A A C T T T A T G A A A A	18rs21_all.seq									
1599	G G T G A T A C C A A A A A C C A C T A G C A G G C G T T G T C T T T G A A C T T T A T G A A A A	cohl_all.seq									
1599	G G T G A T A C C A A A A A C C A C T A G C A G G C G T T G T C T T T G A A C T T T A T G A A A A	cjb111_all.seq									
1601	G G T G A T A C C A A A A A C C A C T A G C A G G C G T T G T C T T T G A A C T T T A T G A A A A	nem316_all.seq									
1600	G G T G A T A C C A A A A A C C A C T A G C A G G C G T T G T C T T T G A A C T T T A T G A A A A	a909_all.seq									
G A A T G G T A G G A C T C C T A T T C G T G T G A A A A A T G G G G T G C A T T C T C A A G A T A Majority											
		4660		4670		4680		4690		4700	
1648	G A A T G G T A G G A C T C C T A T T C G T G T G A A A A A T G G G G T G C A T T C T C A A G A T A	2603_all.seq									
1417	G A A T G G T A G G A C T C C T A T T C G T G T G A A A A A T G G G G T G C A T T C T C A A G A T A	18rs21_all.seq									
1649	G A A T G G T A G G A C T C C T A T T C G T G T G A A A A A T G G G G T G C A T T C T C A A G A T A	cohl_all.seq									
1649	G A A T G G T A G G A C T C C T A T T C G T G T G A A A A A T G G G G T G C A T T C T C A A G A T A	cjb111_all.seq									
1651	G A A T G G T A G G A C T C C T A T T C G T G T G A A A A A T G G G G T G C A T T C T C A A G A T A	nem316_all.seq									
1650	G A A T G G T A G G A C T C C T A T T C G T G T G A A A A A T G G G G T G C A T T C T C A A G A T A	a909_all.seq									
T T G A C G C T G C A A A A C A T T T A G A A A C A G A T T C A T C A G G G C A T A T C A G A A T T Majority											
		4710		4720		4730		4740		4750	
1698	T T G A C G C T G C A A A A C A T T T A G A A A C A G A T T C A T C A G G G C A T A T C A G A A T T	2603_all.seq									
1467	T T G A C G C T G C A A A A C A T T T A G A A A C A G A T T C A T C A G G G C A T A T C A G A A T T	18rs21_all.seq									
1699	T T G A C G C T G C A A A A C A T T T A G A A A C A G A T T C A T C A G G G C A T A T C A G A A T T	cohl_all.seq									
1699	T T G A C G C T G C A A A A C A T T T A G A A A C A G A T T C A T C A G G G C A T A T C A G A A T T	cjb111_all.seq									
1701	T T G A C G C T G C A A A A C A T T T A G A A A C A G A T T C A T C A G G G C A T A T C A G A A T T	nem316_all.seq									
1700	T T G A C G C T G C A A A A C A T T T A G A A A C A G A T T C A T C A G G G C A T A T C A G A A T T	a909_all.seq									
T C C G G G C T C A T C C A T G G G G A C T A T G T C T T A A A A G A A A T C G A G A C A C A G T C Majority											
		4760		4770		4780		4790		4800	
1748	T C C G G G C T C A T C C A T G G G G A C T A T G T C T T A A A A G A A A T C G A G A C A C A G T C	2603_all.seq									
1517	T C C G G G C T C A T C C A T G G G G A C T A T G T C T T A A A A G A A A T C G A G A C A C A G T C	18rs21_all.seq									
1749	T C C G G G C T C A T C C A T G G G G A C T A T G T C T T A A A A G A A A T C G A G A C A C A G T C	cohl_all.seq									
1749	T C C G G G C T C A T C C A T G G G G A C T A T G T C T T A A A A G A A A T C G A G A C A C A G T C	cjb111_all.seq									
1751	T C C G G G C T C A T C C A T G G G G A C T A T G T C T T A A A A G A A A T C G A G A C A C A G T C	nem316_all.seq									
1750	T C C G G G C T C A T C C A T G G G G A C T A T G T C T T A A A A G A A A T C G A G A C A C A G T C	a909_all.seq									
A G C A T A T C A G A T C G G A C A G G C A G A G A C T G C T G T G A C T A T T G A A A A A T C A A Majority											
		4810		4820		4830		4840		4850	
1798	A G C A T A T C A G A T C G G A C A G G C A G A G A C T G C T G T G A C T A T T G A A A A A T C A A	2603_all.seq									
1567	A G C A T A T C A G A T C G G A C A G G C A G A G A C T G C T G T G A C T A T T G A A A A A T C A A	18rs21_all.seq									
1799	A G C A T A T C A G A T C G G A C A G G C A G A G A C T G C T G T G A C T A T T G A A A A A T C A A	cohl_all.seq									
1799	A G C A T A T C A G A T C G G A C A G G C A G A G A C T G C T G T G A C T A T T G A A A A A T C A A	cjb111_all.seq									
1801	A G C A T A T C A G A T C G G A C A G G C A G A G A C T G C T G T G A C T A T T G A A A A A T C A A	nem316_all.seq									
1800	A G C A T A T C A G A T C G G A C A G G C A G A G A C T G C T G T G A C T A T T G A A A A A T C A A	a909_all.seq									
A A A C A G T A A C A G T A A C G A T T G A A A A T A A A A A A G T T C C G A C A C C T A A A G T C Majority											
		4860		4870		4880		4890		4900	
1848	A A A C A G T A A C A G T A A C G A T T G A A A A T A A A A A A G T T C C G A C A C C T A A A G T C	2603_all.seq									
1617	A A A C A G T A A C A G T A A C G A T T G A A A A T A A A A A A G T T C C G A C A C C T A A A G T C	18rs21_all.seq									
1849	A A A C A G T A A C A G T A A C G A T T G A A A A T A A A A A A G T T C C G A C A C C T A A A G T C	cohl_all.seq									
1849	A A A C A G T A A C A G T A A C G A T T G A A A A T A A A A A A G T T C C G A C A C C T A A A G T C	cjb111_all.seq									
1851	A A A C A G T A A C A G T A A C G A T T G A A A A T A A A A A A G T T C C G A C A C C T A A A G T C	nem316_all.seq									
1850	A A A C A G T A A C A G T A A C G A T T G A A A A T A A A A A A G T T C C G A C A C C T A A A G T C	a909_all.seq									

FIGURE 18 M

C C A T C T C G A G G A G G C T C T T A T T C C C A A A A C A G G T G A G C A A C A G G C C A A T G G C Majority									
4910		4920		4930		4940		4950	
4898	C C A T C T C G A G G A G G C T C T T A T T C C C A A A A C A G G T G A G C A A C A G G C C A A T G G C 2603_all.seq								
4667	C C A T C T C G A G G A G G C T C T T A T T C C C A A A A C A G G T G A G C A A C A G G C C A A T G G C 18rs21_all.seq								
4899	C C A T C T C G A G G A G G C T C T T A T T C C C A A A A C A G G T G A G C A A C A G G C C A A T G G C coh1_all.seq								
4899	C C A T C T C G A G G A G G C T C T T A T T C C C A A A A C A G G T G A G C A A C A G G C C A A T G G C cjb111_all.seq								
4901	C C A T C T C G A G G A G G C T C T T A T T C C C A A A A C A G G T G A G C A A C A G G C C A A T G G C nem316_all.seq								
4900	C C A T C T C G A G G A G G C T C T T A T T C C C A A A A C A G G T G A G C A A C A G G C C A A T G G C a909_all.seq								
A C T T G T A A T T A T T G C T G G T A T T T T A A T T G C T T T A G C C T T A C G A T T A C T A T Majority									
4960		4970		4980		4990		5000	
4948	A C T T G T A A T T A T T G G T G G T A T T T T A A T T G C T T T A G C C T T A C G A T T A C T A T 2603_all.seq								
4717	A C T T G T A A T T A T T G G T G G T A T T T T A A T T G C T T T A G C C T T A C G A T T A C T A T 18rs21_all.seq								
4949	A C T T G T A A T T A T T G G T G G T A T T T T A A T T G C T T T A G C C T T A C G A T T A C T A T coh1_all.seq								
4949	A C T T G T A A T T A T T G G T G G T A T T T T A A T T G C T T T A G C C T T A C G A T T A C T A T cjb111_all.seq								
4951	A C T T G T A A T T A T T G G T G G T A T T T T A A T T G C T T T A G C C T T A C G A T T A C T A T nem316_all.seq								
4950	A C T T G T A A T T A T T G G T G G T A T T T T A A T T G C T T T A G C C T T A C G A T T A C T A T a909_all.seq								
C A A A A C A T C G G A A A C A T C A A A A T A A G G A T T A G C A T G G G A C A A A A A T C A A A Majority									
5010		5020		5030		5040		5050	
4998	C A A A A C A T C G G A A A C A T C A A A A T A A G G A T T A G C A T G G G A C A A A A A T C A A A 2603_all.seq								
4767	C A A A A C A T C G G A A A C A T C A A A A T A A G G A T T A G C A T G G G A C A A A A A T C A A A 18rs21_all.seq								
4999	C A A A A C A T C G G A A A C A T C A A A A T A A G G A T T A G C A T G G G A C A A A A A T C A A A coh1_all.seq								
4999	C A A A A C A T C G G A A A C A T C A A A A T A A G G A T T A G C A T G G G A C A A A A A T C A A A cjb111_all.seq								
5001	C A A A A C A T C G G A A A C A T C A A A A T A A G G A T T A G C A T G G G A C A A A A A T C A A A nem316_all.seq								
5000	C A A A A C A T C G G A A A C A T C A A A A T A A G G A T T A G C A T G G G A C A A A A A T C A A A a909_all.seq								
A A T A T C T C T A G C T A C G A A T A T T T C G T A T A T G G A T T T T T C G T T T A A T T T T C T Majority									
5060		5070		5080		5090		5100	
5048	A A T A T C T C T A G C T A C G A A T A T T T C G T A T A T G G A T T T T T C G T T T A A T T T T C T 2603_all.seq								
1817	A A T A T C T C T A G C T A C G A A T A T T T C G T A T A T G G A T T T T T C G T T T A A T T T T C T 18rs21_all.seq								
5049	A A T A T C T C T A G C T A C G A A T A T T T C G T A T A T G G A T T T T T C G T T T A A T T T T C T coh1_all.seq								
5049	A A T A T C T C T A G C T A C G A A T A T T T C G T A T A T G G A T T T T T C G T T T A A T T T T C T cjb111_all.seq								
5051	A A T A T C T C T A G C T A C G A A T A T T T C G T A T A T G G A T T T T T C G T T T A A T T T T C T nem316_all.seq								
5050	A A T A T C T C T A G C T A C G A A T A T T T C G T A T A T G G A T T T T T C G T T T A A T T T T C T a909_all.seq								
T A G C G G G T T T C C T T G T T T T G G C A T T T C C C A T C G T T A G T C A G G T C A T G T A C Majority									
5110		5120		5130		5140		5150	
5098	T A G C G G G T T T C C T T G T T T T G G C A T T T C C C A T C G T T A G T C A G G T C A T G T A C 2603_all.seq								
1867	T A G C G G G T T T C C T T G T T T T G G C A T T T C C C A T C G T T A G T C A G G T C A T G T A C 18rs21_all.seq								
5099	T A G C G G G T T T C C T T G T T T T G G C A T T T C C C A T C G T T A G T C A G G T C A T G T A C coh1_all.seq								
5099	T A G C G G G T T T C C T T G T T T T G G C A T T T C C C A T C G T T A G T C A G G T C A T G T A C cjb111_all.seq								
5101	T A G C G G G T T T C C T T G T T T T G G C A T T T C C C A T C G T T A G T C A G G T C A T G T A C nem316_all.seq								
5100	T A G C G G G T T T C C T T G T T T T G G C A T T T C C C A T C G T T A G T C A G G T C A T G T A C a909_all.seq								
T T T C A A G C C T C T C A C G C C A A T A T T A A T G C T T T T A A A G A A G C T G T T A C C A A Majority									
5160		5170		5180		5190		5200	
5148	T T T C A A G C C T C T C A C G C C A A T A T T A A T G C T T T T A A A G A A G C T G T T A C C A A 2603_all.seq								
917	T T T C A A G C C T C T C A C G C C A A T A T T A A T G C T T T T A A A G A A G C T G T T A C C A A 18rs21_all.seq								
149	T T T C A A G C C T C T C A C G C C A A T A T T A A T G C T T T T A A A G A A G C T G T T A C C A A coh1_all.seq								
149	T T T C A A G C C T C T C A C G C C A A T A T T A A T G C T T T T A A A G A A G C T G T T A C C A A cjb111_all.seq								
151	T T T C A A G C C T C T C A C G C C A A T A T T A A T G C T T T T A A A G A A G C T G T T A C C A A nem316_all.seq								
150	T T T C A A G C C T C T C A C G C C A A T A T T A A T G C T T T T A A A G A A G C T G T T A C C A A a909_all.seq								
G A T T G A C C G G G T G G A G A T T A A T C G G C G T T T A G A A C T T G C T T A T G C T T A T A Majority									
5210		5220		5230		5240		5250	
198	G A T T G A C C G G G T G G A G A T T A A T C G G C G T T T A G A A C T T G C T T A T G C T T A T A 2603_all.seq								
967	G A T T G A C C G G G T G G A G A T T A A T C G G C G T T T A G A A C T T G C T T A T G C T T A T A 18rs21_all.seq								
199	G A T T G A C C G G G T G G A G A T T A A T C G G C G T T T A G A A C T T G C T T A T G C T T A T A coh1_all.seq								
199	G A T T G A C C G G G T G G A G A T T A A T C G G C G T T T A G A A C T T G C T T A T G C T T A T A cjb111_all.seq								
201	G A T T G A C C G G G T G G A G A T T A A T C G G C G T T T A G A A C T T G C T T A T G C T T A T A nem316_all.seq								
200	G A T T G A C C G G G T G G A G A T T A A T C G G C G T T T A G A A C T T G C T T A T G C T T A T A a909_all.seq								

FIGURE 18 N

33/487

ACGCCAGTATATAGCAAGCTGCCAAAACCTAATGGCGAATATCCAGCGCTTAAA Majority												
		5260		5270		5280		5290		5300		
5248		ACGCCAGTATATAGCAAGCTGCCAAAACCTAATGGCGAATATCCAGCGCTTAAA										2603_all.seq
5017		ACGCCAGTATATAGCAAGCTGCCAAAACCTAATGGCGAATATCCAGCGCTTAAA										18rs21_all.seq
5249		ACGCCAGTATATAGCAAGCTGCCAAAACCTAATGGCGAATATCCAGCGCTTAAA										cohl_all.seq
5249		ACGCCAGTATATAGCAAGCTGCCAAAACCTAATGGCGAATATCCAGCGCTTAAA										cjb111_all.seq
5251		ACGCCAGTATATAGCAAGCTGCCAAAACCTAATGGCGAATATCCAGCGCTTAAA										nen316_all.seq
5250		ACGCCAGTATATAGCAAGCTGCCAAAACCTAATGGCGAATATCCAGCGCTTAAA										a909_all.seq
GACCCCTACTCTGCTGAACAAAAGCAGGCAGGGGTCGTTGAGTACGCCCCG Majority												
		5310		5320		5330		5340		5350		
5298		GACCCCTACTCTGCTGAACAAAAGCAGGCAGGGGTCGTTGAGTACGCCCCG										2603_all.seq
5067		GACCCCTACTCTGCTGAACAAAAGCAGGCAGGGGTCGTTGAGTACGCCCCG										18rs21_all.seq
5299		GACCCCTACTCTGCTGAACAAAAGCAGGCAGGGGTCGTTGAGTACGCCCCG										cohl_all.seq
5299		GACCCCTACTCTGCTGAACAAAAGCAGGCAGGGGTCGTTGAGTACGCCCCG										cjb111_all.seq
5301		GACCCCTACTCTGCTGAACAAAAGCAGGCAGGGGTCGTTGAGTACGCCCCG										nen316_all.seq
5300		GACCCCTACTCTGCTGAACAAAAGCAGGCAGGGGTCGTTGAGTACGCCCCG										a909_all.seq
CATGCTTGAAAGTCAAAGAAACAAATAGGTCATGTGATTATTCCAAGAATTAA Majority												
		5360		5370		5380		5390		5400		
5348		CATGCTTGAAAGTCAAAGAAACAAATAGGTCATGTGATTATTCCAAGAATTAA										2603_all.seq
5117		CATGCTTGAAAGTCAAAGAAACAAATAGGTCATGTGATTATTCCAAGAATTAA										18rs21_all.seq
5349		CATGCTTGAAAGTCAAAGAAACAAATAGGTCATGTGATTATTCCAAGAATTAA										cohl_all.seq
5349		CATGCTTGAAAGTCAAAGAAACAAATAGGTCATGTGATTATTCCAAGAATTAA										cjb111_all.seq
5351		CATGCTTGAAAGTCAAAGAAACAAATAGGTCATGTGATTATTCCAAGAATTAA										nen316_all.seq
5350		CATGCTTGAAAGTCAAAGAAACAAATAGGTCATGTGATTATTCCAAGAATTAA										a909_all.seq
ATCAGGATATCCCTATTTACGCTGGCTCTGCTGAAGAAAATCTTCAGAGCG Majority												
		5410		5420		5430		5440		5450		
5398		ATCAGGATATCCCTATTTACGCTGGCTCTGCTGAAGAAAATCTTCAGAGCG										2603_all.seq
5167		ATCAGGATATCCCTATTTACGCTGGCTCTGCTGAAGAAAATCTTCAGAGCG										18rs21_all.seq
5399		ATCAGGATATCCCTATTTACGCTGGCTCTGCTGAAGAAAATCTTCAGAGCG										cohl_all.seq
5399		ATCAGGATATCCCTATTTACGCTGGCTCTGCTGAAGAAAATCTTCAGAGCG										cjb111_all.seq
401		ATCAGGATATCCCTATTTACGCTGGCTCTGCTGAAGAAAATCTTCAGAGCG										nen316_all.seq
400		ATCAGGATATCCCTATTTACGCTGGCTCTGCTGAAGAAAATCTTCAGAGCG										a909_all.seq
GCGGTTGGACATTTAGAGGGGACCAAGTCTTCCAGTCCGTGGTGAGTCAAC Majority												
		5460		5470		5480		5490		5500		
448		GCGGTTGGACATTTAGAGGGGACCAAGTCTTCCAGTCCGTGGTGAGTCAAC										2603_all.seq
217		GCGGTTGGACATTTAGAGGGGACCAAGTCTTCCAGTCCGTGGTGAGTCAAC										18rs21_all.seq
449		GCGGTTGGACATTTAGAGGGGACCAAGTCTTCCAGTCCGTGGTGAGTCAAC										cohl_all.seq
449		GCGGTTGGACATTTAGAGGGGACCAAGTCTTCCAGTCCGTGGTGAGTCAAC										cjb111_all.seq
451		GCGGTTGGACATTTAGAGGGGACCAAGTCTTCCAGTCCGTGGTGAGTCAAC										nen316_all.seq
450		GCGGTTGGACATTTAGAGGGGACCAAGTCTTCCAGTCCGTGGTGAGTCAAC										a909_all.seq
TCATGCCGTTCTAACTGCCCATCGAGGGCTACCAACGGGCCAAGCTATTTAA Majority												
		5510		5520		5530		5540		5550		
498		TCATGCCGTTCTAACTGCCCATCGAGGGCTACCAACGGGCCAAGCTATTTAA										2603_all.seq
267		TCATGCCGTTCTAACTGCCCATCGAGGGCTACCAACGGGCCAAGCTATTTAA										18rs21_all.seq
499		TCATGCCGTTCTAACTGCCCATCGAGGGCTACCAACGGGCCAAGCTATTTAA										cohl_all.seq
499		TCATGCCGTTCTAACTGCCCATCGAGGGCTACCAACGGGCCAAGCTATTTAA										cjb111_all.seq
501		TCATGCCGTTCTAACTGCCCATCGAGGGCTACCAACGGGCCAAGCTATTTAA										nen316_all.seq
500		TCATGCCGTTCTAACTGCCCATCGAGGGCTACCAACGGGCCAAGCTATTTAA										a909_all.seq
CCAATTTAGACAAGGTAACAGTAGGTCAGCGTTTTTACATTGAACACATC Majority												
		5560		5570		5580		5590		5600		
548		CCAATTTAGACAAGGTAACAGTAGGTCAGCGTTTTTACATTGAACACATC										2603_all.seq
517		CCAATTTAGACAAGGTAACAGTAGGTCAGCGTTTTTACATTGAACACATC										18rs21_all.seq
549		CCAATTTAGACAAGGTAACAGTAGGTCAGCGTTTTTACATTGAACACATC										cohl_all.seq
549		CCAATTTAGACAAGGTAACAGTAGGTCAGCGTTTTTACATTGAACACATC										cjb111_all.seq
551		CCAATTTAGACAAGGTAACAGTAGGTCAGCGTTTTTACATTGAACACATC										nen316_all.seq
550		CCAATTTAGACAAGGTAACAGTAGGTCAGCGTTTTTACATTGAACACATC										a909_all.seq

FIGURE 18 O

34/487

WO 2006/078318

Alignment Report of A1-1, alignment, using J. nem method with Weighted residue weight table.
Thursday, July 29, 2004 5:46 PM

PCT/US2005/027239

Page 17

G G C G G A A A G A T T G C T T A T C A G G T A G A C C A A A T C A A A G T T A T C G C C C C T G A Majority									
5610		5620		5630		5640		5650	
598	G	G	C	G	G	A	A	G	A
367	G	G	C	G	G	A	A	G	A
599	G	G	C	G	G	A	A	G	A
599	G	G	C	G	G	A	A	G	A
601	G	G	C	G	G	A	A	G	A
600	G	G	C	G	G	A	A	G	A
T C A G T T A G A G G A T T T G T A C G T G A T T C A A G G A G A A G A T C A C G T C A C C C T A T Majority									
5660		5670		5680		5690		5700	
648	T	C	A	G	T	T	A	G	A
417	T	C	A	G	T	T	A	G	A
649	T	C	A	G	T	T	A	G	A
649	T	C	A	G	T	T	A	G	A
651	T	C	A	G	T	T	A	G	A
650	T	C	A	G	T	T	A	G	A
T A A C T T G C A C A C C T T A T A T G A T A A A T A G T C A T C G C C T C C T C G T T C G A G G C Majority									
5710		5720		5730		5740		5750	
698	T	A	A	C	T	T	G	C	A
467	T	A	A	C	T	T	G	C	A
599	T	A	A	C	T	T	G	C	A
599	T	A	A	C	T	T	G	C	A
701	T	A	A	C	T	T	G	C	A
700	T	A	A	C	T	T	G	C	A
A A G C G A A T T C C T T A T G T G C A A A A A A C A G T G C A G A A A G A T T C A A A G A C C T T Majority									
5760		5770		5780		5790		5800	
748	A	A	G	C	G	A	A	T	T
517	A	A	G	C	G	A	A	T	T
749	A	A	G	C	G	A	A	T	T
749	A	A	G	C	G	A	A	T	T
751	A	A	G	C	G	A	A	T	T
750	A	A	G	C	G	A	A	T	T
C A G G C A A C A A C A A T A C C T A A C C T A T G C T A T G T G G G T A G T C G T T G G A C T T A Majority									
5810		5820		5830		5840		5850	
798	C	A	G	G	C	A	A	C	A
567	C	A	G	G	C	A	A	C	A
799	C	A	G	G	C	A	A	C	A
799	C	A	G	G	C	A	A	C	A
301	C	A	G	G	C	A	A	C	A
300	C	A	G	G	C	A	A	C	A
T C T T G C T G T C G C T T C T C A T T T G C T T T A A A A A G A C G A A A C A G A A A A A G C G C Majority									
5860		5870		5880		5890		5900	
148	T	C	T	T	G	C	T	G	T
317	T	C	T	T	G	C	T	G	T
149	T	C	T	T	G	C	T	G	T
149	T	C	T	T	G	C	T	G	T
151	T	C	T	T	G	C	T	G	T
150	T	C	T	T	G	C	T	G	T
A C A A A G A A T G A A A A A G C G G C T A G T C A A A A T A G T C A C A A T A A T T C C A A A T A Majority									
5910		5920		5930		5940		5950	
198	A	C	A	A	G	A	A	T	G
367	A	C	A	A	G	A	A	T	G
199	A	C	A	A	G	A	A	T	G
199	A	C	A	A	G	A	A	T	G
101	A	C	A	A	G	A	A	T	G
100	A	C	A	A	G	A	A	T	G

FIGURE 18 P

	A T A A A A T C G A C C C T C A A T T T T C G C A A G C T G A T T C T C T T A T T T Majority									
	5960		5970		5980		5990		6000	
5948	A T A A A A T C A G A A C C C T C A T T T T T G T G A T G G G A A G T C T G A T T C T C T T A T T T 2603_all.seq									
5717	A T A A A A T C A G A A C C C T C A T T T T T G T G A T G G G A A G T C T G A T T C T C T T A T T T 18rs21_all.seq									
5949	A T A A A A T C A G A A C C C T C A T T T T T G T G A T G G G A A G T C T G A T T C T C T T A T T T coh1_all.seq									
5949	A T A A A A T C A G A A C C C T C A T T T T T G T G A T G G G A A G T C T G A T T C T C T T A T T T cjb111_all.seq									
5951	A T A A A A T C A G A A C C C T C A T T T T T G T G A T G G G A A G T C T G A T T C T C T T A T T T nem316_all.seq									
5950	A T A A A A T C A G A A C C C T C A T T T T T G T G A T G G G A A G T C T G A T T C T C T T A T T T a909_all.seq									
	C C G A T T C T G A G C C A G G T A A G T T A C T A C C T T G C T T C G C A T C A A A A T A T T A A Majority									
	6010		6020		6030		6040		6050	
5998	C C G A T T C T G A G C C A G G T A A G T T A C T A C C T T G C T T C G C A T C A A A A T A T T A A 2603_all.seq									
5767	C C G A T T C T G A G C C A G G T A A G T T A C T A C C T T G C T T C G C A T C A A A A T A T T A A 18rs21_all.seq									
5999	C C G A T T C T G A G C C A G G T A A G T T A C T A C C T T G C T T C G C A T C A A A A T A T T A A coh1_all.seq									
5999	C C G A T T C T G A G C C A G G T A A G T T A C T A C C T T G C T T C G C A T C A A A A T A T T A A cjb111_all.seq									
5001	C C G A T T C T G A G C C A G G T A A G T T A C T A C C T T G C T T C G C A T C A A A A T A T T A A nem316_all.seq									
5000	C C G A T T C T G A G C C A G G T A A G T T A C T A C C T T G C T T C G C A T C A A A A T A T T A A a909_all.seq									
	T C A A T T T A A G C G G G A A G T C G C T A A G A T T G A T A C T A A T A C G G T T G A A C G A C Majority									
	6060		6070		6080		6090		6100	
5048	T C A A T T T A A G C G G G A A G T C G C T A A G A T T G A T A C T A A T A C G G T T G A A C G A C 2603_all.seq									
5817	T C A A T T T A A G C G G G A A G T C G C T A A G A T T G A T A C T A A T A C G G T T G A A C G A C 18rs21_all.seq									
5049	T C A A T T T A A G C G G G A A G T C G C T A A G A T T G A T A C T A A T A C G G T T G A A C G A C coh1_all.seq									
5049	T C A A T T T A A G C G G G A A G T C G C T A A G A T T G A T A C T A A T A C G G T T G A A C G A C cjb111_all.seq									
5051	T C A A T T T A A G C G G G A A G T C G C T A A G A T T G A T A C T A A T A C G G T T G A A C G A C nem316_all.seq									
5050	T C A A T T T A A G C G G G A A G T C G C T A A G A T T G A T A C T A A T A C G G T T G A A C G A C a909_all.seq									
	G C A T C G C T T T A G C T A A T G C T T A C A A T G A G A C G T T A T C A A G G A A T C C C T T C Majority									
	6110		6120		6130		6140		6150	
5098	G C A T C G C T T T A G C T A A T G C T T A C A A T G A G A C G T T A T C A A G G A A T C C C T T C 2603_all.seq									
5867	G C A T C G C T T T A G C T A A T G C T T A C A A T G A G A C G T T A T C A A G G A A T C C C T T C 18rs21_all.seq									
5099	G C A T C G C T T T A G C T A A T G C T T A C A A T G A G A C G T T A T C A A G G A A T C C C T T C coh1_all.seq									
5099	G C A T C G C T T T A G C T A A T G C T T A C A A T G A G A C G T T A T C A A G G A A T C C C T T C cjb111_all.seq									
5101	G C A T C G C T T T A G C T A A T G C T T A C A A T G A G A C G T T A T C A A G G A A T C C C T T C nem316_all.seq									
5100	G C A T C G C T T T A G C T A A T G C T T A C A A T G A G A C G T T A T C A A G G A A T C C C T T C a909_all.seq									
	C T T A T A G A C C C T T T T A C C A G T A A G C A A A A A G A A G G T T T G A G A G A G T A T G C Majority									
	6160		6170		6180		6190		6200	
5148	C T T A T A G A C C C T T T T A C C A G T A A G C A A A A A G A A G G T T T G A G A G A G T A T G C 2603_all.seq									
517	C T T A T A G A C C C T T T T A C C A G T A A G C A A A A A G A A G G T T T G A G A G A G T A T G C 18rs21_all.seq									
5149	C T T A T A G A C C C T T T T A C C A G T A A G C A A A A A G A A G G T T T G A G A G A G T A T G C coh1_all.seq									
5149	C T T A T A G A C C C T T T T A C C A G T A A G C A A A A A G A A G G T T T G A G A G A G T A T G C cjb111_all.seq									
5151	C T T A T A G A C C C T T T T A C C A G T A A G C A A A A A G A A G G T T T G A G A G A G T A T G C nem316_all.seq									
5150	C T T A T A G A C C C T T T T A C C A G T A A G C A A A A A G A A G G T T T G A G A G A G T A T G C a909_all.seq									
	T C G T A T C C T T G A A G T T C A T G A G C A A A T A G G T C A T G T G C C A A T C C C A A G T A Majority									
	6210		6220		6230		6240		6250	
5198	T C G T A T C C T T G A A G T T C A T G A G C A A A T A G G T C A T G T G C C A A T C C C A A G T A 2603_all.seq									
567	T C G T A T C C T T G A A G T T C A T G A G C A A A T A G G T C A T G T G C C A A T C C C A A G T A 18rs21_all.seq									
5199	T C G T A T C C T T G A A G T T C A T G A G C A A A T A G G T C A T G T G C C A A T C C C A A G T A coh1_all.seq									
5199	T C G T A T C C T T G A A G T T C A T G A G C A A A T A G G T C A T G T G C C A A T C C C A A G T A cjb111_all.seq									
201	T C G T A T C C T T G A A G T T C A T G A G C A A A T A G G T C A T G T G C C A A T C C C A A G T A nem316_all.seq									
200	T C G T A T C C T T G A A G T T C A T G A G C A A A T A G G T C A T G T G C C A A T C C C A A G T A a909_all.seq									
	T T C C G C G T T C A T A T T C C A A T T T A T G C T G G A A C A T C C G A A A C T C T G C T T C A G Majority									
	6260		6270		6280		6290		6300	
248	T T C C G C G T T C A T A T T C C A A T T T A T G C T G G A A C A T C C G A A A C T C T G C T T C A G 2603_all.seq									
517	T T C C G C G T T C A T A T T C C A A T T T A T G C T G G A A C A T C C G A A A C T C T G C T T C A G 18rs21_all.seq									
249	T T C C G C G T T C A T A T T C C A A T T T A T G C T G G A A C A T C C G A A A C T C T G C T T C A G coh1_all.seq									
249	T T C C G C G T T C A T A T T C C A A T T T A T G C T G G A A C A T C C G A A A C T C T G C T T C A G cjb111_all.seq									
251	T T C C G C G T T C A T A T T C C A A T T T A T G C T G G A A C A T C C G A A A C T C T G C T T C A G nem316_all.seq									
250	T T C C G C G T T C A T A T T C C A A T T T A T G C T G G A A C A T C C G A A A C T C T G C T T C A G a909_all.seq									

FIGURE 18 Q

36/487

AAAGGCTAGCTGCGGCAATTTGAGGGAACCACTCTTCCAGTGGGAGGTTTGTCT Majority										
6310		6320		6330		6340		6350		
6298	AAAGGCTAGCTGCGGCAATTTGAGGGAACCACTCTTCCAGTGGGAGGTTTGTCT									2603_all.seq
6067	AAAGGCTAGCTGCGGCAATTTGAGGGAACCACTCTTCCAGTGGGAGGTTTGTCT									18rs21_all.seq
6299	AAAGGCTAGCTGCGGCAATTTGAGGGAACCACTCTTCCAGTGGGAGGTTTGTCT									cohl_all.seq
6299	AAAGGCTAGCTGCGGCAATTTGAGGGAACCACTCTTCCAGTGGGAGGTTTGTCT									cjb111_all.seq
6301	AAAGGCTAGCTGCGGCAATTTGAGGGAACCACTCTTCCAGTGGGAGGTTTGTCT									nen316_all.seq
6300	AAAGGCTAGCTGCGGCAATTTGAGGGAACCACTCTTCCAGTGGGAGGTTTGTCT									a909_all.seq
AACCATTTCAGTACTAACTGCCACCGTGGCTTGCCAAACAGCTAGGCTAT Majority										
6360		6370		6380		6390		6400		
6348	AACCATTTCAGTACTAACTGCCACCGTGGCTTGCCAAACAGCTAGGCTAT									2603_all.seq
6117	AACCATTTCAGTACTAACTGCCACCGTGGCTTGCCAAACAGCTAGGCTAT									18rs21_all.seq
6349	AACCATTTCAGTACTAACTGCCACCGTGGCTTGCCAAACAGCTAGGCTAT									cohl_all.seq
6349	AACCATTTCAGTACTAACTGCCACCGTGGCTTGCCAAACAGCTAGGCTAT									cjb111_all.seq
6351	AACCATTTCAGTACTAACTGCCACCGTGGCTTGCCAAACAGCTAGGCTAT									nen316_all.seq
6350	AACCATTTCAGTACTAACTGCCACCGTGGCTTGCCAAACAGCTAGGCTAT									a909_all.seq
TTACCGACTTAAATAAAAGTTAAAAAAGGCCACAGTTTTCTATGTGACGGAAC Majority										
6410		6420		6430		6440		6450		
6398	TTACCGACTTAAATAAAAGTTAAAAAAGGCCACAGTTTTCTATGTGACGGAAC									2603_all.seq
6167	TTACCGACTTAAATAAAAGTTAAAAAAGGCCACAGTTTTCTATGTGACGGAAC									18rs21_all.seq
6399	TTACCGACTTAAATAAAAGTTAAAAAAGGCCACAGTTTTCTATGTGACGGAAC									cohl_all.seq
6399	TTACCGACTTAAATAAAAGTTAAAAAAGGCCACAGTTTTCTATGTGACGGAAC									cjb111_all.seq
6401	TTACCGACTTAAATAAAAGTTAAAAAAGGCCACAGTTTTCTATGTGACGGAAC									nen316_all.seq
6400	TTACCGACTTAAATAAAAGTTAAAAAAGGCCACAGTTTTCTATGTGACGGAAC									a909_all.seq
ATCAAGGAAACACTTGCCTACAAAGTCGTCTCTATCAAAGTTCTGGATCC Majority										
6460		6470		6480		6490		6500		
6448	ATCAAGGAAACACTTGCCTACAAAGTCGTCTCTATCAAAGTTCTGGATCC									2603_all.seq
6217	ATCAAGGAAACACTTGCCTACAAAGTCGTCTCTATCAAAGTTCTGGATCC									18rs21_all.seq
6449	ATCAAGGAAACACTTGCCTACAAAGTCGTCTCTATCAAAGTTCTGGATCC									cohl_all.seq
6449	ATCAAGGAAACACTTGCCTACAAAGTCGTCTCTATCAAAGTTCTGGATCC									cjb111_all.seq
6451	ATCAAGGAAACACTTGCCTACAAAGTCGTCTCTATCAAAGTTCTGGATCC									nen316_all.seq
6450	ATCAAGGAAACACTTGCCTACAAAGTCGTCTCTATCAAAGTTCTGGATCC									a909_all.seq
AACAGCTTTTAAAGTGAGGTTAAGATTGCTCAATGCTAAGGATTATATAACCT Majority										
6510		6520		6530		6540		6550		
3498	AACAGCTTTTAAAGTGAGGTTAAGATTGCTCAATGCTAAGGATTATATAACCT									2603_all.seq
3267	AACAGCTTTTAAAGTGAGGTTAAGATTGCTCAATGCTAAGGATTATATAACCT									18rs21_all.seq
3499	AACAGCTTTTAAAGTGAGGTTAAGATTGCTCAATGCTAAGGATTATATAACCT									cohl_all.seq
3499	AACAGCTTTTAAAGTGAGGTTAAGATTGCTCAATGCTAAGGATTATATAACCT									cjb111_all.seq
3501	AACAGCTTTTAAAGTGAGGTTAAGATTGCTCAATGCTAAGGATTATATAACCT									nen316_all.seq
3500	AACAGCTTTTAAAGTGAGGTTAAGATTGCTCAATGCTAAGGATTATATAACCT									a909_all.seq
TGCTGACTTGCACACCTTACATCATCAATAGTCATCGTCTCTTGGTAAAAA Majority										
6560		6570		6580		6590		6600		
1548	TGCTGACTTGCACACCTTACATCATCAATAGTCATCGTCTCTTGGTAAAAA									2603_all.seq
1317	TGCTGACTTGCACACCTTACATCATCAATAGTCATCGTCTCTTGGTAAAAA									18rs21_all.seq
1549	TGCTGACTTGCACACCTTACATCATCAATAGTCATCGTCTCTTGGTAAAAA									cohl_all.seq
1549	TGCTGACTTGCACACCTTACATCATCAATAGTCATCGTCTCTTGGTAAAAA									cjb111_all.seq
1551	TGCTGACTTGCACACCTTACATCATCAATAGTCATCGTCTCTTGGTAAAAA									nen316_all.seq
1550	TGCTGACTTGCACACCTTACATCATCAATAGTCATCGTCTCTTGGTAAAAA									a909_all.seq
CGAGAGCGCTATTGCTTATGATTCTACCGAGGCGGAAAAGGCACAAAGAACAA Majority										
6610		6620		6630		6640		6650		
1598	CGAGAGCGCTATTGCTTATGATTCTACCGAGGCGGAAAAGGCACAAAGAACAA									2603_all.seq
1367	CGAGAGCGCTATTGCTTATGATTCTACCGAGGCGGAAAAGGCACAAAGAACAA									18rs21_all.seq
1599	CGAGAGCGCTATTGCTTATGATTCTACCGAGGCGGAAAAGGCACAAAGAACAA									cohl_all.seq
1599	CGAGAGCGCTATTGCTTATGATTCTACCGAGGCGGAAAAGGCACAAAGAACAA									cjb111_all.seq
1601	CGAGAGCGCTATTGCTTATGATTCTACCGAGGCGGAAAAGGCACAAAGAACAA									nen316_all.seq
1600	CGAGAGCGCTATTGCTTATGATTCTACCGAGGCGGAAAAGGCACAAAGAACAA									a909_all.seq

FIGURE 18 R

37/487

A A C C G T A C A A G A T T A T C G T T T G T C A C T A G T G T T G A A G A T A C T A C T A G T A T Majority										
6660		6670		6680		6690		6700		
1648	A A C C G T A C A A G A T T A T C G T T T G T C A C T A G T G T T G A A G A T A C T A C T A G T A T									2603_all.seq
1417	A A C C G T A C A A G A T T A T C G T T T G T C A C T A G T G T T G A A G A T A C T A C T A G T A T									18rs21_all.seq
1649	A A C C G T A C A A G A T T A T C G T T T G T C A C T A G T G T T G A A G A T A C T A C T A G T A T									cohl_all.seq
1649	A A C C G T A C A A G A T T A T C G T T T G T C A C T A G T G T T G A A G A T A C T A C T A G T A T									cjb111_all.seq
1651	A A C C G T A C A A G A T T A T C G T T T G T C A C T A G T G T T G A A G A T A C T A C T A G T A T									nen316_all.seq
1650	A A C C G T A C A A G A T T A T C G T T T G T C A C T A G T G T T G A A G A T A C T A C T A G T A T									a909_all.seq
T A T T A A T T G G A C T C T T T C A T C G T G A T A A T G A T G A G A A G A T G G A T G C A A C A T Majority										
6710		6720		6730		6740		6750		
1698	T A T T A A T T G G A C T C T T T C A T C G T G A T A A T G A T G A G A A G A T G G A T G C A A C A T									2603_all.seq
1467	T A T T A A T T G G A C T C T T T C A T C G T G A T A A T G A T G A G A A G A T G G A T G C A A C A T									18rs21_all.seq
1699	T A T T A A T T G G A C T C T T T C A T C G T G A T A A T G A T G A G A A G A T G G A T G C A A C A T									cohl_all.seq
1699	T A T T A A T T G G A C T C T T T C A T C G T G A T A A T G A T G A G A A G A T G G A T G C A A C A T									cjb111_all.seq
1701	T A T T A A T T G G A C T C T T T C A T C G T G A T A A T G A T G A G A A G A T G G A T G C A A C A T									nen316_all.seq
1700	T A T T A A T T G G A C T C T T T C A T C G T G A T A A T G A T G A G A A G A T G G A T G C A A C A T									a909_all.seq
C G T C A A T A A C G A T G T T G T G A A T G G C T T A C T T A C T T A T C A A A T A G G T G A C T Majority										
6760		6770		6780		6790		6800		
1748	C G T C A A T A A C G A T G T T G T G A A T G G C T T A C T T A C T T A T C A A A T A G G T G A C T									2603_all.seq
517	C G T C A A T A A C G A T G T T G T G A A T G G C T T A C T T A C T T A T C A A A T A G G T G A C T									18rs21_all.seq
1749	C G T C A A T A A C G A T G T T G T G A A T G G C T T A C T T A C T T A T C A A A T A G G T G A C T									cohl_all.seq
1749	C G T C A A T A A C G A T G T T G T G A A T G G C T T A C T T A C T T A T C A A A T A G G T G A C T									cjb111_all.seq
1751	C G T C A A T A A C G A T G T T G T G A A T G G C T T A C T T A C T T A T C A A A T A G G T G A C T									nen316_all.seq
1750	C G T C A A T A A C G A T G T T G T G A A T G G C T T A C T T A C T T A T C A A A T A G G T G A C T									a909_all.seq
A A T G A T G A T T G T G A A T A A T G G T T A T C T A G A A G G C A G A A A A A T G A A A A A G A Majority										
6810		6820		6830		6840		6850		
1794	A A T G A T G A T T G T G A A T A A T G G T T A T C T A G A A G G C A G A A A A A T G A A A A A G A									2603_all.seq
567	A A T G A T G A T T G T G A A T A A T G G T T A T C T A G A A G G C A G A A A A A T G A A A A A G A									18rs21_all.seq
1799	A A T G A T G A T T G T G A A T A A T G G T T A T C T A G A A G G C A G A A A A A T G A A A A A G A									cohl_all.seq
1799	A A T G A T G A T T G T G A A T A A T G G T T A T C T A G A A G G C A G A A A A A T G A A A A A G A									cjb111_all.seq
801	A A T G A T G A T T G T G A A T A A T G G T T A T C T A G A A G G C A G A A A A A T G A A A A A G A									nen316_all.seq
800	A A T G A T G A T T G T G A A T A A T G G T T A T C T A G A A G G C A G A A A A A T G A A A A A G A									a909_all.seq
G A C A A A A A A A T A T G G A G A G G G T T A T C A G T T A C T T T A C T A A T C C T G T C C C A A Majority										
6860		6870		6880		6890		6900		
1844	G A C A A A A A A A T A T G G A G A G G G T T A T C A G T T A C T T T A C T A A T C C T G T C C C A A									2603_all.seq
1817	G A C A A A A A A A T A T G G A G A G G G T T A T C A G T T A C T T T A C T A A T C C T G T C C C A A									18rs21_all.seq
1849	G A C A A A A A A A T A T G G A G A G G G T T A T C A G T T A C T T T A C T A A T C C T G T C C C A A									cohl_all.seq
1849	G A C A A A A A A A T A T G G A G A G G G T T A T C A G T T A C T T T A C T A A T C C T G T C C C A A									cjb111_all.seq
1851	G A C A A A A A A A T A T G G A G A G G G T T A T C A G T T A C T T T A C T A A T C C T G T C C C A A									nen316_all.seq
1850	G A C A A A A A A A T A T G G A G A G G G T T A T C A G T T A C T T T A C T A A T C C T G T C C C A A									a909_all.seq
A T T C C A T T T G G T A T A T T G G T A C A A G G T G A A A C C C A A G A T A C C A A T C A A G C Majority										
6910		6920		6930		6940		6950		
1894	A T T C C A T T T G G T A T A T T G G T A C A A G G T G A A A C C C A A G A T A C C A A T C A A G C									2603_all.seq
1867	A T T C C A T T T G G T A T A T T G G T A C A A G G T G A A A C C C A A G A T A C C A A T C A A G C									18rs21_all.seq
1899	A T T C C A T T T G G T A T A T T G G T A C A A G G T G A A A C C C A A G A T A C C A A T C A A G C									cohl_all.seq
1899	A T T C C A T T T G G T A T A T T G G T A C A A G G T G A A A C C C A A G A T A C C A A T C A A G C									cjb111_all.seq
1901	A T T C C A T T T G G T A T A T T G G T A C A A G G T G A A A C C C A A G A T A C C A A T C A A G C									nen316_all.seq
1900	A T T C C A T T T G G T A T A T T G G T A C A A G G T G A A A C C C A A G A T A C C A A T C A A G C									a909_all.seq
A C T T G G A A A A G T A A T T G T T A A A A A A A C G G G A G A C A A T G C T A C A C C A T T A G Majority										
6960		6970		6980		6990		7000		
1944	A C T T G G A A A A G T A A T T G T T A A A A A A A C G G G A G A C A A T G C T A C A C C A T T A G									2603_all.seq
1917	A C T T G G A A A A G T A A T T G T T A A A A A A A C G G G A G A C A A T G C T A C A C C A T T A G									18rs21_all.seq
1949	A C T T G G A A A A G T A A T T G T T A A A A A A A C G G G A G A C A A T G C T A C A C C A T T A G									cohl_all.seq
1949	A C T T G G A A A A G T A A T T G T T A A A A A A A C G G G A G A C A A T G C T A C A C C A T T A G									cjb111_all.seq
1951	A C T T G G A A A A G T A A T T G T T A A A A A A A C G G G A G A C A A T G C T A C A C C A T T A G									nen316_all.seq
1950	A C T T G G A A A A G T A A T T G T T A A A A A A A C G G G A G A C A A T G C T A C A C C A T T A G									a909_all.seq

FIGURE 18 S

38/487

WO 2006/078318

Alignment Report of A1-1 alignment, using J. Hein method with Weighted residue weight table.
Thursday, July 29, 2004 5:46 PM

PCT/US2005/027239

Page 21

G C A A A G C G A C T T T T G T G T T A A A A A A T G A C A A T G A T A A G T C A G A A A C A A G T Majority									
7010		7020		7030		7040		7050	
5994	G	C	A	A	A	G	C	G	A
5767	G	C	A	A	A	G	C	G	A
5999	G	C	A	A	A	G	C	G	A
5999	G	C	A	A	A	G	C	G	A
7001	G	C	A	A	A	G	C	G	A
7000	G	C	A	A	A	G	C	G	A
C A C G A A A C G G T A G A G G G T T C T G G A G A A G C A A C C T T T T G A A A A C A T A A A A C C Majority									
7060		7070		7080		7090		7100	
7044	C	A	C	G	A	A	A	C	G
5817	C	A	C	G	A	A	A	C	G
7049	C	A	C	G	A	A	A	C	G
7049	C	A	C	G	A	A	A	C	G
7051	C	A	C	G	A	A	A	C	G
7050	C	A	C	G	A	A	A	C	G
T G G A G A C T A C A C A T T A A G A G A A A A C A G C A C C A A T T G G T T A T A A A A A A A Majority									
7110		7120		7130		7140		7150	
7094	T	G	G	A	G	A	C	T	A
5867	T	G	G	A	G	A	C	T	A
7099	T	G	G	A	G	A	C	T	A
7099	T	G	G	A	G	A	C	T	A
7101	T	G	G	A	G	A	C	T	A
7100	T	G	G	A	G	A	C	T	A
C T G A T A A A A C C T G G A A A G T T A A A G T T G C A G A T A A C G G A G C A A C A A T A A T C Majority									
7160		7170		7180		7190		7200	
7144	C	T	G	A	T	A	A	A	C
5917	C	T	G	A	T	A	A	A	C
7149	C	T	G	A	T	A	A	A	C
7149	C	T	G	A	T	A	A	A	C
7151	C	T	G	A	T	A	A	A	C
7150	C	T	G	A	T	A	A	A	C
G A G G G T A T G G A T G C A G A T A A A G C A G A A A C G A A A A G A A G T T T T C A A T G C Majority									
7210		7220		7230		7240		7250	
7194	G	A	G	G	T	A	T	G	G
5967	G	A	G	G	T	A	T	G	G
7199	G	A	G	G	T	A	T	G	G
7199	G	A	G	G	T	A	T	G	G
7201	G	A	G	G	T	A	T	G	G
7200	G	A	G	G	T	A	T	G	G
C C A A T A T C C A A A A T C A G C T A T T T A T G A G G A T A C A A A A G A A A A T T A C C C A T Majority									
7260		7270		7280		7290		7300	
7244	C	C	A	A	T	A	T	C	C
7017	C	C	A	A	T	A	T	C	C
7249	C	C	A	A	T	A	T	C	C
7249	C	C	A	A	T	A	T	C	C
7251	C	C	A	A	T	A	T	C	C
7250	C	C	A	A	T	A	T	C	C
T A G T T A A T G T A G A G G G T T C C A A A G T T G G T G A A C A A T A C A A A G C A T T G A A T Majority									
7310		7320		7330		7340		7350	
7294	T	A	G	T	T	A	A	T	G
7067	T	A	G	T	T	A	A	T	G
7299	T	A	G	T	T	A	A	T	G
7299	T	A	G	T	T	A	A	T	G
7301	T	A	G	T	T	A	A	T	G
7300	T	A	G	T	T	A	A	T	G

FIGURE 18T

CCAATAAATGCAAAAGATGCTCGAAGACAGACATTGCTGAAGCTTGCTTATC Majority									
7360		7370		7380		7390		7400	
7344	CCAATAAATGCAAAAGATGCTCGAAGACAGACATTGCTGAAGCTTGCTTATC 2603_all.seq								
7117	CCAATAAATGCAAAAGATGCTCGAAGACAGACATTGCTGAAGCTTGCTTATC 18rs21_all.seq								
7349	CCAATAAATGCAAAAGATGCTCGAAGACAGACATTGCTGAAGCTTGCTTATC coh1_all.seq								
7349	CCAATAAATGCAAAAGATGCTCGAAGACAGACATTGCTGAAGCTTGCTTATC cjb111_all.seq								
7351	CCAATAAATGCAAAAGATGCTCGAAGACAGACATTGCTGAAGCTTGCTTATC nem316_all.seq								
7350	CCAATAAATGCAAAAGATGCTCGAAGACAGACATTGCTGAAGCTTGCTTATC a909_all.seq								
AAAAAAAATTACAGGGGTCAATGATCTCGATAAGCAATAAATATAAAATTG Majority									
7410		7420		7430		7440		7450	
7394	AAAAAAAATTACAGGGGTCAATGATCTCGATAAGCAATAAATATAAAATTG 2603_all.seq								
167	AAAAAAAATTACAGGGGTCAATGATCTCGATAAGCAATAAATATAAAATTG 18rs21_all.seq								
7399	AAAAAAAATTACAGGGGTCAATGATCTCGATAAGCAATAAATATAAAATTG coh1_all.seq								
7399	AAAAAAAATTACAGGGGTCAATGATCTCGATAAGCAATAAATATAAAATTG cjb111_all.seq								
401	AAAAAAAATTACAGGGGTCAATGATCTCGATAAGCAATAAATATAAAATTG nem316_all.seq								
400	AAAAAAAATTACAGGGGTCAATGATCTCGATAAGCAATAAATATAAAATTG a909_all.seq								
AATTAACCTGTTGAGGGTAAACCACCTGTTGAAACGAAAGAACTTAATCAA Majority									
7460		7470		7480		7490		7500	
444	AATTAACCTGTTGAGGGTAAACCACCTGTTGAAACGAAAGAACTTAATCAA 2603_all.seq								
217	AATTAACCTGTTGAGGGTAAACCACCTGTTGAAACGAAAGAACTTAATCAA 18rs21_all.seq								
449	AATTAACCTGTTGAGGGTAAACCACCTGTTGAAACGAAAGAACTTAATCAA coh1_all.seq								
449	AATTAACCTGTTGAGGGTAAACCACCTGTTGAAACGAAAGAACTTAATCAA cjb111_all.seq								
451	AATTAACCTGTTGAGGGTAAACCACCTGTTGAAACGAAAGAACTTAATCAA nem316_all.seq								
450	AATTAACCTGTTGAGGGTAAACCACCTGTTGAAACGAAAGAACTTAATCAA a909_all.seq								
CCACTAGATGTCGTTGCTGCTATTAGATAAATTCAAATAGTATGAATAATGA Majority									
7510		7520		7530		7540		7550	
494	CCACTAGATGTCGTTGCTGCTATTAGATAAATTCAAATAGTATGAATAATGA 2603_all.seq								
267	CCACTAGATGTCGTTGCTGCTATTAGATAAATTCAAATAGTATGAATAATGA 18rs21_all.seq								
499	CCACTAGATGTCGTTGCTGCTATTAGATAAATTCAAATAGTATGAATAATGA coh1_all.seq								
499	CCACTAGATGTCGTTGCTGCTATTAGATAAATTCAAATAGTATGAATAATGA cjb111_all.seq								
501	CCACTAGATGTCGTTGCTGCTATTAGATAAATTCAAATAGTATGAATAATGA nem316_all.seq								
500	CCACTAGATGTCGTTGCTGCTATTAGATAAATTCAAATAGTATGAATAATGA a909_all.seq								
AAGAGCCCAATAATTCTCAAAGAGCATTAAAGCTCGGGGAAGCAGTTGAAA Majority									
7560		7570		7580		7590		7600	
544	AAGAGCCCAATAATTCTCAAAGAGCATTAAAGCTCGGGGAAGCAGTTGAAA 2603_all.seq								
317	AAGAGCCCAATAATTCTCAAAGAGCATTAAAGCTCGGGGAAGCAGTTGAAA 18rs21_all.seq								
549	AAGAGCCCAATAATTCTCAAAGAGCATTAAAGCTCGGGGAAGCAGTTGAAA coh1_all.seq								
549	AAGAGCCCAATAATTCTCAAAGAGCATTAAAGCTCGGGGAAGCAGTTGAAA cjb111_all.seq								
551	AAGAGCCCAATAATTCTCAAAGAGCATTAAAGCTCGGGGAAGCAGTTGAAA nem316_all.seq								
550	AAGAGCCCAATAATTCTCAAAGAGCATTAAAGCTCGGGGAAGCAGTTGAAA a909_all.seq								
AGCTGATTGATAAAATTACATCAAATAAAGACAATAAGCTAGCTCTTCTG Majority									
7610		7620		7630		7640		7650	
594	AGCTGATTGATAAAATTACATCAAATAAAGACAATAAGCTAGCTCTTCTG 2603_all.seq								
367	AGCTGATTGATAAAATTACATCAAATAAAGACAATAAGCTAGCTCTTCTG 18rs21_all.seq								
599	AGCTGATTGATAAAATTACATCAAATAAAGACAATAAGCTAGCTCTTCTG coh1_all.seq								
599	AGCTGATTGATAAAATTACATCAAATAAAGACAATAAGCTAGCTCTTCTG cjb111_all.seq								
601	AGCTGATTGATAAAATTACATCAAATAAAGACAATAAGCTAGCTCTTCTG nem316_all.seq								
600	AGCTGATTGATAAAATTACATCAAATAAAGACAATAAGCTAGCTCTTCTG a909_all.seq								
ACATATGCCCTCAACCATTGATGCTACTGAAGCGACCGTATCAAAGCG Majority									
7660		7670		7680		7690		7700	
644	ACATATGCCCTCAACCATTGATGCTACTGAAGCGACCGTATCAAAGCG 2603_all.seq								
417	ACATATGCCCTCAACCATTGATGCTACTGAAGCGACCGTATCAAAGCG 18rs21_all.seq								
649	ACATATGCCCTCAACCATTGATGCTACTGAAGCGACCGTATCAAAGCG coh1_all.seq								
649	ACATATGCCCTCAACCATTGATGCTACTGAAGCGACCGTATCAAAGCG cjb111_all.seq								
651	ACATATGCCCTCAACCATTGATGCTACTGAAGCGACCGTATCAAAGCG nem316_all.seq								
650	ACATATGCCCTCAACCATTGATGCTACTGAAGCGACCGTATCAAAGCG a909_all.seq								

FIGURE 18 U

A C T T G C C G A T C A A A A T G G T A A A G C G C T G A A T G A T A C T G T A T C A T G G G A T T Majority									
	7710	7720	7730	7740	7750				
1694	A C T T G C C G A T C A A A A T G G T A A A G C G C T G A A T G A T A C T G T A T C A T G G G A T T					2603_all.seq			
1467	A G T T G C C G A T C A A A A T G G T A A A G C G C T G A A T G A T A C T G T A T C A T G G G A T T					18rs21_all.seq			
1699	A G T T G C C G A T C A A A A T G G T A A A G C G C T G A A T G A T A C T G T A T C A T G G G A T T					cohl_all.seq			
1699	A C T T G C C G A T C A A A A T G G T A A A G C G C T G A A T G A T A C T G T A T C A T G G G A T T					cjb111_all.seq			
1701	A G T T G C C G A T C A A A A T G G T A A A G C G C T G A A T G A T A C T G T A T C A T G G G A T T					nea316_all.seq			
1700	A G T T G C C G A T C A A A A T G G T A A A G C G C T G A A T G A T A C T G T A T C A T G G G A T T					a909_all.seq			
A T C A T A A A A C T A C T T T T T A C A G C A A C T A C A C A T A A T T A C A G T T A T T T A A A T Majority									
	7760	7770	7780	7790	7800				
744	A T C A T A A A A C T A C T T T T T A C A G C A A C T A C A C A T A A T T A C A G T T A T T T A A A T					2603_all.seq			
517	A T C A T A A A A C T A C T T T T T A C A G C A A C T A C A C A T A A T T A C A C T T A T T T A A A T					18rs21_all.seq			
749	A T C A T A A A A C T A C T T T T T A C A G C A A C T A C A C A T A A T T A C A C T T A T T T A A A T					cohl_all.seq			
749	A T C A T A A A A C T A C T T T T T A C A G C A A C T A C A C A T A A T T A C A C T T A T T T A A A T					cjb111_all.seq			
751	A T C A T A A A A C T A C T T T T T A C A G C A A C T A C A C A T A A T T A C A C T T A T T T A A A T					nea316_all.seq			
750	A T C A T A A A A C T A C T T T T T A C A G C A A C T A C A C A T A A T T A C A C T T A T T T A A A T					a909_all.seq			
T T A A C A A A T G A T G C T A A C G A A G T T A A T A T T C T A A A G T C A A G A A T T C C A A A Majority									
	7810	7820	7830	7840	7850				
794	T T A A C A A A T G A T G C T A A C G A A G T T A A T A T T C T A A A G T C A A G A A T T C C A A A					2603_all.seq			
567	T T A A C A A A T G A T G C T A A C G A A G T T A A T A T T C T A A A G T C A A G A A T T C C A A A					18rs21_all.seq			
799	T T A A C A A A T G A T G C T A A C G A A G T T A A T A T T C T A A A G T C A A G A A T T C C A A A					cohl_all.seq			
799	T T A A C A A A T G A T G C T A A C G A A G T T A A T A T T C T A A A G T C A A G A A T T C C A A A					cjb111_all.seq			
801	T T A A C A A A T G A T G C T A A C G A A G T T A A T A T T C T A A A G T C A A G A A T T C C A A A					nea316_all.seq			
800	T T A A C A A A T G A T G C T A A C G A A G T T A A T A T T C T A A A G T C A A G A A T T C C A A A					a909_all.seq			
G G A A G C G G A G C A T A T A A A T G G G G A T C G C A C G C T C T A T C A A T T T G G T G C G A Majority									
	7860	7870	7880	7890	7900				
844	G G A A G C G G A G C A T A T A A A T G G G G A T C G C A C G C T C T A T C A A T T T G G T G C G A					2603_all.seq			
617	G G A A G C G G A G C A T A T A A A T G G G G A T C G C A C G C T C T A T C A A T T T G G T G C G A					18rs21_all.seq			
849	G G A A G C G G A G C A T A T A A A T G G G G A T C G C A C G C T C T A T C A A T T T G G T G C G A					cohl_all.seq			
849	G G A A G C G G A G C A T A T A A A T G G G G A T C G C A C G C T C T A T C A A T T T G G T G C G A					cjb111_all.seq			
851	G G A A G C G G A G C A T A T A A A T G G G G A T C G C A C G C T C T A T C A A T T T G G T G C G A					nea316_all.seq			
850	G G A A G C G G A G C A T A T A A A T G G G G A T C G C A C G C T C T A T C A A T T T G G T G C G A					a909_all.seq			
C A T T T A C T C A A A A A G C T C T A A T G A A A G C A A A T G A A A T T T T A G A G A C A C A A Majority									
	7910	7920	7930	7940	7950				
894	C A T T T A C T C A A A A A G C T C T A A T G A A A G C A A A T G A A A T T T T A G A G A C A C A A					2603_all.seq			
667	C A T T T A C T C A A A A A G C T C T A A T G A A A G C A A A T G A A A T T T T A G A G A C A C A A					18rs21_all.seq			
899	C A T T T A C T C A A A A A G C T C T A A T G A A A G C A A A T G A A A T T T T A G A G A C A C A A					cohl_all.seq			
899	C A T T T A C T C A A A A A G C T C T A A T G A A A G C A A A T G A A A T T T T A G A G A C A C A A					cjb111_all.seq			
901	C A T T T A C T C A A A A A G C T C T A A T G A A A G C A A A T G A A A T T T T A G A G A C A C A A					nea316_all.seq			
900	C A T T T A C T C A A A A A G C T C T A A T G A A A G C A A A T G A A A T T T T A G A G A C A C A A					a909_all.seq			
A G T T C T A A T G C T A G A A A A A A C T T A T T T T T C A C G T A A C T G A T G C T G T C C C Majority									
	7960	7970	7980	7990	8000				
944	A G T T C T A A T G C T A G A A A A A A C T T A T T T T T C A C G T A A C T G A T G C T G T C C C					2603_all.seq			
717	A G T T C T A A T G C T A G A A A A A A C T T A T T T T T C A C G T A A C T G A T G C T G T C C C					18rs21_all.seq			
949	A G T T C T A A T G C T A G A A A A A A C T T A T T T T T C A C G T A A C T G A T G C T G T C C C					cohl_all.seq			
949	A G T T C T A A T G C T A G A A A A A A C T T A T T T T T C A C G T A A C T G A T G C T G T C C C					cjb111_all.seq			
951	A G T T C T A A T G C T A G A A A A A A C T T A T T T T T C A C G T A A C T G A T G C T G T C C C					nea316_all.seq			
950	A G T T C T A A T G C T A G A A A A A A C T T A T T T T T C A C G T A A C T G A T G C T G T C C C					a909_all.seq			
T A C G A T G T C T T A T G C C A T A A A T T T T A A T C C T T A T A T A T C A A C A T C T T A C C Majority									
	8010	8020	8030	8040	8050				
994	T A C G A T G T C T T A T G C C A T A A A T T T T A A T C C T T A T A T A T A T C A A C A T C T T A C C					2603_all.seq			
767	T A C G A T G T C T T A T G C C A T A A A T T T T A A T C C T T A T A T A T A T C A A C A T C T T A C C					18rs21_all.seq			
999	T A C G A T G T C T T A T G C C A T A A A T T T T A A T C C T T A T A T A T A T C A A C A T C T T A C C					cohl_all.seq			
999	T A C G A T G T C T T A T G C C A T A A A T T T T A A T C C T T A T A T A T A T C A A C A T C T T A C C					cjb111_all.seq			
301	T A C G A T G T C T T A T G C C A T A A A T T T T A A T C C T T A T A T A T A T C A A C A T C T T A C C					nea316_all.seq			
300	T A C G A T G T C T T A T G C C A T A A A T T T T A A T C C T T A T A T A T A T C A A C A T C T T A C C					a909_all.seq			

FIGURE 18 V

FIGURE 18 W

42/487

A A T G C A A A T A T A A G A C C T A A A G G T T A T G A C A T T T T T A C T G T T G C G A T T G C Majority		8410	8420	8430	8440	8450
8394	A A T G C A A A T A T A A G A C C T A A A G G T T A T G A C A T T T T T A C T G T T G C G A T T G C					2603_all.seq
8167	A A T G C A A A T A T A A G A C C T A A A G G T T A T G A C A T T T T T A C T G T T G C G A T T G C					18rs21_all.seq
8399	A A T G C A A A T A T A A G A C C T A A A G G T T A T G A C A T T T T T A C T G T T G C G A T T G C					cohl_all.seq
8399	A A T G C A A A T A T A A G A C C T A A A G G T T A T G A C A T T T T T A C T G T T G C G A T T G C					cjb111_all.seq
8401	A A T G C A A A T A T A A G A C C T A A A G G T T A T G A C A T T T T T A C T G T T G C G A T T G C					nen316_all.seq
8400	A A T G C A A A T A T A A G A C C T A A A G G T T A T G A C A T T T T T A C T G T T G C G A T T G C					a909_all.seq
T G T A A A C G G A G A T C C T G G T G C A A C T C C T C T T G A A G C T G A G A A A T T T A T G C Majority		8460	8470	8480	8490	8500
8444	T G T A A A C G G A G A T C C T G G T G C A A C T C C T C T T G A A G C T G A G A A A T T T A T G C					2603_all.seq
8217	T G T A A A C G G A G A T C C T G G T G C A A C T C C T C T T G A A G C T G A G A A A T T T A T G C					18rs21_all.seq
8449	T G T A A A C G G A G A T C C T G G T G C A A C T C C T C T T G A A G C T G A G A A A T T T A T G C					cohl_all.seq
8449	T G T A A A C G G A G A T C C T G G T G C A A C T C C T C T T G A A G C T G A G A A A T T T A T G C					cjb111_all.seq
8451	T G T A A A C G G A G A T C C T G G T G C A A C T C C T C T T G A A G C T G A G A A A T T T A T G C					nen316_all.seq
8450	T G T A A A C G G A G A T C C T G G T G C A A C T C C T C T T G A A G C T G A G A A A T T T A T G C					a909_all.seq
A A T C A A T A T C A A G T A A A A C A G A A A A T T A T A C T A A T G T T G A T G A T A C A A A T Majority		8510	8520	8530	8540	8550
8494	A A T C A A T A T C A A G T A A A A C A G A A A A T T A T A C T A A T G T T G A T G A T A C A A A T					2603_all.seq
8267	A A T C A A T A T C A A G T A A A A C A G A A A A T T A T A C T A A T G T T G A T G A T A C A A A T					18rs21_all.seq
8499	A A T C A A T A T C A A G T A A A A C A G A A A A T T A T A C T A A T G T T G A T G A T A C A A A T					cohl_all.seq
8499	A A T C A A T A T C A A G T A A A A C A G A A A A T T A T A C T A A T G T T G A T G A T A C A A A T					cjb111_all.seq
3501	A A T C A A T A T C A A G T A A A A C A G A A A A T T A T A C T A A T G T T G A T G A T A C A A A T					nen316_all.seq
3500	A A T C A A T A T C A A G T A A A A C A G A A A A T T A T A C T A A T G T T G A T G A T A C A A A T					a909_all.seq
A A A A T T T A T G A T G A C C T A A A T A A A T A C T T T A A A A C A A T T G T T G A G C A A A A Majority		8560	8570	8580	8590	8600
3544	A A A A T T T A T G A T G A C C T A A A T A A A T A C T T T A A A A C A A T T G T T G A G C A A A A					2603_all.seq
3317	A A A A T T T A T G A T G A C C T A A A T A A A T A C T T T A A A A C A A T T G T T G A G C A A A A					18rs21_all.seq
3549	A A A A T T T A T G A T G A C C T A A A T A A A T A C T T T A A A A C A A T T G T T G A G C A A A A					cohl_all.seq
3549	A A A A T T T A T G A T G A C C T A A A T A A A T A C T T T A A A A C A A T T G T T G A G C A A A A					cjb111_all.seq
3551	A A A A T T T A T G A T G A C C T A A A T A A A T A C T T T A A A A C A A T T G T T G A G C A A A A					nen316_all.seq
3550	A A A A T T T A T G A T G A C C T A A A T A A A T A C T T T A A A A C A A T T G T T G A G C A A A A					a909_all.seq
A C A T T C T A T T T C T T G A T G C A A A T G T G A C T G A T C C T A T G G G A G A G A T G A T T C Majority		8610	8620	8630	8640	8650
1594	A C A T T C T A T T T C T T G A T G C A A A T G T G A C T G A T C C T A T G G G A G A G A T G A T T C					2603_all.seq
1367	A C A T T C T A T T T C T T G A T G C A A A T G T G A C T G A T C C T A T G G G A G A G A T G A T T C					18rs21_all.seq
1599	A C A T T C T A T T T C T T G A T G C A A A T G T G A C T G A T C C T A T G G G A G A G A T G A T T C					cohl_all.seq
1599	A C A T T C T A T T T C T T G A T G C A A A T G T G A C T G A T C C T A T G G G A G A G A T G A T T C					cjb111_all.seq
1601	A C A T T C T A T T T C T T G A T G C A A A T G T G A C T G A T C C T A T G G G A G A G A T G A T T C					nen316_all.seq
1600	A C A T T C T A T T T C T T G A T G C A A A T G T G A C T G A T C C T A T G G G A G A G A T G A T T C					a909_all.seq
A A T T C C A A T T A A A A A A T G G T C A A A G T T T T A C A C A T G A T G A T T A C G T T T T C Majority		8660	8670	8680	8690	8700
1644	A A T T C C A A T T A A A A A A T G G T C A A A G T T T T A C A C A T G A T G A T T A C G T T T T C					2603_all.seq
1417	A A T T C C A A T T A A A A A A T G G T C A A A G T T T T A C A C A T G A T G A T T A C G T T T T C					18rs21_all.seq
1649	A A T T C C A A T T A A A A A A T G G T C A A A G T T T T A C A C A T G A T G A T T A C G T T T T C					cohl_all.seq
1649	A A T T C C A A T T A A A A A A T G G T C A A A G T T T T A C A C A T G A T G A T T A C G T T T T C					cjb111_all.seq
1651	A A T T C C A A T T A A A A A A T G G T C A A A G T T T T A C A C A T G A T G A T T A C G T T T T C					nen316_all.seq
1650	A A T T C C A A T T A A A A A A T G G T C A A A G T T T T A C A C A T G A T G A T T A C G T T T T C					a909_all.seq
G T T G C A A A T G A T G C C A C T C A A T T A A A A A A T G G T G T G C C T C T T G C T G C A C C Majority		8710	8720	8730	8740	8750
1694	G T T G C A A A T G A T G C C A C T C A A T T A A A A A A T G G T G T G C C T C T T G C T G C A C C					2603_all.seq
1467	G T T G C A A A T G A T G C C A C T C A A T T A A A A A A T G G T G T G C C T C T T G C T G C A C C					18rs21_all.seq
1699	G T T G C A A A T G A T G C C A C T C A A T T A A A A A A T G G T G T G C C T C T T G C T G C A C C					cohl_all.seq
1699	G T T G C A A A T G A T G C C A C T C A A T T A A A A A A T G G T G T G C C T C T T G C T G C A C C					cjb111_all.seq
701	G T T G C A A A T G A T G C C A C T C A A T T A A A A A A T G G T G T G C C T C T T G C T G C A C C					nen316_all.seq
700	G T T G C A A A T G A T G C C A C T C A A T T A A A A A A T G G T G T G C C T C T T G C T G C A C C					a909_all.seq

FIGURE 18 X

A A A C A G T G A T G C G C G A A T T T T A A A A G A T G T T A C A G T G A C T T A T G A T A A G A Majority										
8760		8770		8780		8790		8800		
8744	A A A C A G T G A T G C G C G A A T T T T A A A A G A T G T T A C A G T G A C T T A T G A T A A G A									2603_all.seq
8517	A A A C A G T G A T G C G C G A A T T T T A A A A G A T G T T A C A G T G A C T T A T G A T A A G A									18rs21_all.seq
8749	A A A C A G T G A T G C G C G A A T T T T A A A A G A T G T T A C A G T G A C T T A T G A T A A G A									cohl_all.seq
8749	A A A C A G T G A T G C G C G A A T T T T A A A A G A T G T T A C A G T G A C T T A T G A T A A G A									cjb111_all.seq
8751	A A A C A G T G A T G C G C G A A T T T T A A A A G A T G T T A C A G T G A C T T A T G A T A A G A									nem316_all.seq
8750	A A A C A G T G A T G C G C G A A T T T T A A A A G A T G T T A C A G T G A C T T A T G A T A A G A									a909_all.seq
C A T C T C A A A C C A T C A A A A T C A A T C A T T T G A A C T T A G G A A G T G C A C A A A A A Majority										
8810		8820		8830		8840		8850		
8794	C A T C T C A A A C C A T C A A A A T C A A T C A T T T G A A C T T A G G A A G T G C A C A A A A A									2603_all.seq
8567	C A T C T C A A A C C A T C A A A A T C A A T C A T T T G A A C T T A G G A A G T G C A C A A A A A									18rs21_all.seq
8799	C A T C T C A A A C C A T C A A A A T C A A T C A T T T G A A C T T A G G A A G T G C A C A A A A A									cohl_all.seq
8799	C A T C T C A A A C C A T C A A A A T C A A T C A T T T G A A C T T A G G A A G T G C A C A A A A A									cjb111_all.seq
8801	C A T C T C A A A C C A T C A A A A T C A A T C A T T T G A A C T T A G G A A G T G C A C A A A A A									nem316_all.seq
8800	C A T C T C A A A C C A T C A A A A T C A A T C A T T T G A A C T T A G G A A G T G C A C A A A A A									a909_all.seq
G T A G T T C T T A C C T A T G A T G T A C G T T T A A A A G A T A A C T A T A T A A G T A A C A A Majority										
8860		8870		8880		8890		8900		
8844	G T A G T T C T T A C C T A T G A T G T A C G T T T A A A A G A T A A C T A T A T A A G T A A C A A									2603_all.seq
8617	G T A G T T C T T A C C T A T G A T G T A C G T T T A A A A G A T A A C T A T A T A A G T A A C A A									18rs21_all.seq
8849	G T A G T T C T T A C C T A T G A T G T A C G T T T A A A A G A T A A C T A T A T A A G T A A C A A									cohl_all.seq
8849	G T A G T T C T T A C C T A T G A T G T A C G T T T A A A A G A T A A C T A T A T A A G T A A C A A									cjb111_all.seq
8851	G T A G T T C T T A C C T A T G A T G T A C G T T T A A A A G A T A A C T A T A T A A G T A A C A A									nem316_all.seq
8850	G T A G T T C T T A C C T A T G A T G T A C G T T T A A A A G A T A A C T A T A T A A G T A A C A A									a909_all.seq
A T T T T A C A A T A C A A A T A A T C G T A C A A C G C T A A G T C C G A A G A G T G A A A A A G Majority										
8910		8920		8930		8940		8950		
8894	A T T T T A C A A T A C A A A T A A T C G T A C A A C G C T A A G T C C G A A G A G T G A A A A A G									2603_all.seq
8667	A T T T T A C A A T A C A A A T A A T C G T A C A A C G C T A A G T C C G A A G A G T G A A A A A G									18rs21_all.seq
8899	A T T T T A C A A T A C A A A T A A T C G T A C A A C G C T A A G T C C G A A G A G T G A A A A A G									cohl_all.seq
8899	A T T T T A C A A T A C A A A T A A T C G T A C A A C G C T A A G T C C G A A G A G T G A A A A A G									cjb111_all.seq
8901	A T T T T A C A A T A C A A A T A A T C G T A C A A C G C T A A G T C C G A A G A G T G A A A A A G									nem316_all.seq
8900	A T T T T A C A A T A C A A A T A A T C G T A C A A C G C T A A G T C C G A A G A G T G A A A A A G									a909_all.seq
A A C C A A A T A C T A T T C G T G A T T T C C C A A T T C C C A A A A T T C G T G A T G T T C G T Majority										
8960		8970		8980		8990		9000		
3944	A A C C A A A T A C T A T T C G T G A T T T C C C A A T T C C C A A A A T T C G T G A T G T T C G T									2603_all.seq
3717	A A C C A A A T A C T A T T C G T G A T T T C C C A A T T C C C A A A A T T C G T G A T G T T C G T									18rs21_all.seq
3949	A A C C A A A T A C T A T T C G T G A T T T C C C A A T T C C C A A A A T T C G T G A T G T T C G T									cohl_all.seq
3949	A A C C A A A T A C T A T T C G T G A T T T C C C A A T T C C C A A A A T T C G T G A T G T T C G T									cjb111_all.seq
3951	A A C C A A A T A C T A T T C G T G A T T T C C C A A T T C C C A A A A T T C G T G A T G T T C G T									nem316_all.seq
3950	A A C C A A A T A C T A T T C G T G A T T T C C C A A T T C C C A A A A T T C G T G A T G T T C G T									a909_all.seq
G A G T T T C C G G T A C T A A C C A T C A G T A A T C A G A A C A A A A T G G G T G A G C T T G A Majority										
9010		9020		9030		9040		9050		
3994	G A G T T T C C G G T A C T A A C C A T C A G T A A T C A G A A C A A A A T G G G T G A G C T T G A									2603_all.seq
3767	G A G T T T C C G G T A C T A A C C A T C A G T A A T C A G A A C A A A A T G G G T G A G C T T G A									18rs21_all.seq
3999	G A G T T T C C G G T A C T A A C C A T C A G T A A T C A G A A C A A A A T G G G T G A G C T T G A									cohl_all.seq
3999	G A G T T T C C G G T A C T A A C C A T C A G T A A T C A G A A C A A A A T G G G T G A G C T T G A									cjb111_all.seq
3001	G A G T T T C C G G T A C T A A C C A T C A G T A A T C A G A A C A A A A T G G G T G A G C T T G A									nem316_all.seq
3000	G A G T T T C C G G T A C T A A C C A T C A G T A A T C A G A A C A A A A T G G G T G A G C T T G A									a909_all.seq
A T T T A T T A A A G T T A A T A A A G A C A A A C A T T C A G A A T C G C T T T T G C G A C C T A Majority										
9060		9070		9080		9090		9100		
3044	A T T T A T T A A A G T T A A T A A A G A C A A A C A T T C A G A A T C G C T T T T G C G A C C T A									2603_all.seq
3817	A T T T A T T A A A G T T A A T A A A G A C A A A C A T T C A G A A T C G C T T T T G C G A C C T A									18rs21_all.seq
3049	A T T T A T T A A A G T T A A T A A A G A C A A A C A T T C A G A A T C G C T T T T G C G A C C T A									cohl_all.seq
3049	A T T T A T T A A A G T T A A T A A A G A C A A A C A T T C A G A A T C G C T T T T G C G A C C T A									cjb111_all.seq
3051	A T T T A T T A A A G T T A A T A A A G A C A A A C A T T C A G A A T C G C T T T T G C G A C C T A									nem316_all.seq
3050	A T T T A T T A A A G T T A A T A A A G A C A A A C A T T C A G A A T C G C T T T T G C G A C C T A									a909_all.seq

FIGURE 18 Y

44/487

A G T T T C A A C T T T C A G A T T A C A A A A A A C A T T T T C T G G G T A T A A G C A A T T T G T T Majority																																																					
9110										9120										9130										9140										9150													
9094	A	G	T	T	T	C	A	A	C	T	T	C	A	G	A	T	A	A	A	A	A	G	A	T	T	T	T	T	T	C	T	G	G	G	T	A	T	A	A	G	C	A	A	T	T	T	G	T	2603_all.seq				
8867	A	G	T	T	T	C	A	A	C	T	T	C	A	G	A	T	A	A	A	A	A	A	G	A	T	T	T	T	T	T	C	T	G	G	G	T	A	T	A	A	G	C	A	A	T	T	T	G	T	18rs21_all.seq			
9099	A	G	T	T	T	C	A	A	C	T	T	C	A	G	A	T	A	A	A	A	A	A	G	A	T	T	T	T	T	T	C	T	G	G	G	T	A	T	A	A	G	C	A	A	T	T	T	G	T	cohl_all.seq			
9099	A	G	T	T	T	C	A	A	C	T	T	C	A	G	A	T	A	A	A	A	A	A	G	A	T	T	T	T	T	T	C	T	G	G	G	T	A	T	A	A	G	C	A	A	T	T	T	G	T	cjb111_all.seq			
9101	A	G	T	T	T	C	A	A	C	T	T	C	A	G	A	T	A	A	A	A	A	A	G	A	T	T	T	T	T	T	C	T	G	G	G	T	A	T	A	A	G	C	A	A	T	T	T	G	T	nen316_all.seq			
9100	A	G	T	T	T	C	A	A	C	T	T	C	A	G	A	T	A	A	A	A	A	A	G	A	T	T	T	T	T	T	C	T	G	G	G	T	A	T	A	A	G	C	A	A	T	T	T	G	T	a909_all.seq			
C C A G A G G G A A G T G A T G T T A C A A C A A A G A A T G A T G G T A A A A T T T A T T T T A A Majority																																																					
9160										9170										9180										9190										9200													
9144	C	C	A	G	A	G	G	G	A	A	G	T	G	A	T	G	T	T	A	C	A	A	C	A	A	A	G	A	A	T	G	A	T	G	G	T	A	A	A	A	T	T	T	A	T	T	T	T	A	2603_all.seq			
8917	C	C	A	G	A	G	G	G	A	A	G	T	G	A	T	G	T	T	A	C	A	A	C	A	A	A	A	G	A	A	T	G	A	T	G	G	T	A	A	A	A	T	T	T	A	T	T	T	T	A	18rs21_all.seq		
9149	C	C	A	G	A	G	G	G	A	A	G	T	G	A	T	G	T	T	A	C	A	A	C	A	A	A	A	G	A	A	T	G	A	T	G	G	T	A	A	A	A	T	T	T	A	T	T	T	T	A	cohl_all.seq		
9149	C	C	A	G	A	G	G	G	A	A	G	T	G	A	T	G	T	T	A	C	A	A	C	A	A	A	A	G	A	A	T	G	A	T	G	G	T	A	A	A	A	T	T	T	A	T	T	T	T	A	cjb111_all.seq		
9151	C	C	A	G	A	G	G	A	A	G	T	G	A	T	G	T	T	A	C	A	A	C	A	A	A	A	A	G	A	A	T	G	A	T	G	G	T	A	A	A	A	T	T	T	A	T	T	T	T	A	nen316_all.seq		
9150	C	C	A	G	A	G	G	A	A	G	T	G	A	T	G	T	T	A	C	A	A	C	A	A	A	A	A	G	A	A	T	G	A	T	G	G	T	A	A	A	A	T	T	T	A	T	T	T	T	A	a909_all.seq		
A G C A C T T C A A G A T G G T A A C T A T A A A T T A T A T G A A A T T T C A A G T C C A G A T C Majority																																																					
9210										9220										9230										9240										9250													
9194	A	G	C	A	C	T	T	C	A	A	G	A	T	G	G	T	A	A	C	T	A	T	A	A	A	T	T	A	T	A	T	G	A	A	A	T	T	T	C	A	A	G	T	C	C	A	G	A	T	C	2603_all.seq		
9367	A	G	C	A	C	T	T	C	A	A	G	A	T	G	G	T	A	A	C	T	A	T	A	A	A	T	T	A	T	A	T	G	A	A	A	T	T	T	C	A	A	G	T	C	C	A	G	A	T	C	18rs21_all.seq		
9199	A	G	C	A	C	T	T	C	A	A	G	A	T	G	G	T	A	A	C	T	A	T	A	A	A	T	T	A	T	A	T	G	A	A	A	T	T	T	C	A	A	G	T	C	C	A	G	A	T	C	cohl_all.seq		
9199	A	G	C	A	C	T	T	C	A	A	G	A	T	G	G	T	A	A	C	T	A	T	A	A	A	T	T	A	T	A	T	G	A	A	A	T	T	T	C	A	A	G	T	C	C	A	G	A	T	C	cjb111_all.seq		
9201	A	G	C	A	C	T	T	C	A	A	G	A	T	G	G	T	A	A	C	T	A	T	A	A	A	T	T	A	T	A	T	G	A	A	A	T	T	T	C	A	A	G	T	C	C	A	G	A	T	C	nen316_all.seq		
9200	A	G	C	A	C	T	T	C	A	A	G	A	T	G	G	T	A	A	C	T	A	T	A	A	A	T	T	A	T	A	T	G	A	A	A	T	T	T	C	A	A	G	T	C	C	A	G	A	T	C	a909_all.seq		
G C T A T A T A G A G G T T A A A A C G A A A C C T G T T G T G A C A T T T A C A A T T C A A A A T Majority																																																					
9260										9270										9280										9290										9300													
9244	G	C	T	A	T	A	T	A	G	A	G	G	T	T	A	A	A	C	G	A	A	A	C	C	T	G	T	T	G	T	G	A	C	A	T	T	T	A	C	A	A	T	T	C	A	A	A	A	T	2603_all.seq			
9017	G	C	T	A	T	A	T	A	G	A	G	G	T	T	A	A	A	C	G	A	A	A	C	C	T	G	T	T	G	T	G	A	C	A	T	T	T	A	C	A	A	T	T	C	A	A	A	A	T	18rs21_all.seq			
9249	G	C	T	A	T	A	T	A	G	A	G	G	T	T	A	A	A	C	G	A	A	A	C	C	T	G	T	T	G	T	G	A	C	A	T	T	T	A	C	A	A	T	T	C	A	A	A	A	T	cohl_all.seq			
9249	G	C	T	A	T	A	T	A	G	A	G	G	T	T	A	A	A	C	G	A	A	A	C	C	T	G	T	T	G	T	G	A	C	A	T	T	T	A	C	A	A	T	T	C	A	A	A	A	T	cjb111_all.seq			
9251	G	C	T	A	T	A	T	A	G	A	G	G	T	T	A	A	A	C	G	A	A	A	C	C	T	G	T	T	G	T	G	A	C	A	T	T	T	A	C	A	A	T	T	C	A	A	A	A	T	nen316_all.seq			
9250	G	C	T	A	T	A	T	A	G	A	G	G	T	T	A	A	A	C	G	A	A	A	C	C	T	G	T	T	G	T	G	A	C	A	T	T	T	A	C	A	A	T	T	C	A	A	A	A	T	a909_all.seq			
G G A G A A G T T A C G A A C C T G A A A G C A G A T C C A A A T G C T A A T A A A A A T C A A A T Majority																																																					
9310										9320										9330										9340										9350													
294	G	G	A	G	A	A	G	T	T	A	C	G	A	A	C	C	T	G	A	A	A	G	C	A	G	A	T	C	C	A	A	A	T	G	C	T	A	A	T	A	A	A	A	A	T	C	A	A	A	T	2603_all.seq		
067	G	G	A	G	A	A	G	T	T	A	C	G	A	A	C	C	T	G	A	A	A	G	C	A	G	A	T	C	C	A	A	A	T	G	C	T	A	A	T	A	A	A	A	A	T	C	A	A	A	T	18rs21_all.seq		
299	G	G	A	G	A	A	G	T	T	A	C	G	A	A	C	C	T	G	A	A	A	G	C	A	G	A	T	C	C	A	A	A	T	G	C	T	A	A	T	A	A	A	A	A	T	C	A	A	A	T	cohl_all.seq		
299	G	G	A	G	A	A	G	T	T	A	C	G	A	A	C	C	T	G	A	A	A	G	C	A	G	A	T	C	C	A	A	A	T	G	C	T	A	A	T	A	A	A	A	A	T	C	A	A	A	T	cjb111_all.seq		
301	G	G	A	G	A	A	G	T	T	A	C	G	A	A	C	C	T	G	A	A	A	G	C	A	G	A	T	C	C	A	A	A	T	G	C	T	A	A	T	A	A	A	A	A	T	C	A	A	A	T	nen316_all.seq		
300	G	G	A	G	A	A	G	T	T	A	C	G	A	A	C	C	T	G	A	A	A	G	C	A	G	A	T	C	C	A	A	A	T	G	C	T	A	A	T	A	A	A	A	A	T	C	A	A	A	T	a909_all.seq		
C G G G T A T C T T G A A G G A A A T G G T A A A C A T C T T A T T A C C A A C A C T C C C A A A C Majority																																																					
9360										9370										9380										9390										9400													
344	C	G	G	G	T	A	T	C	T	T	G	A	A	G	G	A	A	A	T	G	G	T	A	A	A	C	A	T	C	T	T	A	T	T	A	C	C	A	A	C	A	C	A	C	T	C	C	C	A	A	A	C	2603_all.seq
117	C	G	G	G	T	A	T	C	T	T	G	A	A	G	G	A	A	A	T	G	G	T	A	A	A	C	A	T	C	T	T	A	T	T	A	C	C	A	A	C	A	C	A	C	T	C	C	C	A	A	A	C	18rs21_all.seq
349	C	G	G	G	T	A	T	C	T	T	G	A	A	G	G	A	A	A	T	G	G	T	A	A	A	C	A	T	C	T	T	A	T	T	A	C	C	A	A	C	A	C	A	C	T	C	C	C	A	A	A	C	cohl_all.seq
349	C	G	G	G	T	A	T	C	T	T	G	A	A	G	G	A	A	A	T	G	G	T	A	A	A	C	A	T	C	T	T	A	T	T	A	C	C	A	A	C	A	C	A	C	T	C	C	C	A	A	A	C	cjb111_all.seq
351	C	G	G	G	T	A	T	C	T	T	G	A	A	G	G	A	A	A	T	G	G	T	A	A	A	C	A	T	C	T	T	A	T	T	A	C	C	A	A	C	A	C	A	C	T	C	C	C	A	A	A	C	nen316_all.seq
350	C	G	G	G	T	A	T	C	T	T	G	A	A	G	G	A	A	A	T	G	G	T	A	A	A	C	A	T	C	T	T	A	T	T	A	C	C	A	A	C	A	C	A	C	T	C	C	C	A	A	A	C	a909_all.seq
G C C C A C C A G G T G T T T T T C C T A A A A C A G G G G G A A T T G G T A C A A T T G T C T A T Majority																																																					
9410										9420										9430										9440										9450													
394	G	C	C	C	A	C	C	A	G	G	T	G	T	T	T	T	T	T	C	C	T	A	A	A	A	C	A	G	G	G	G	G	A	A	T	T	G	G	T	A	C	A	A	T	T	G	T	C	T	A	T	2603_all.seq	
167	G	C	C	C	A	C	C	A	G	G	T	G	T	T	T	T	T	T	T	C	C	T	A	A	A	A	C	A	G	G	G	G	G	A	A	T	T	G	G	T	A	C	A	A	T	T	G	T	C	T	A	T	18rs21_all.seq
399	G	C	C	C	A	C	C	A	G	G	T	G	T	T	T	T	T	T	T	C	C	T	A	A	A	A	C	A	G	G	G	G	G	A	A	T	T	G	G	T	A	C	A	A	T	T							

45/487

A T A T T A G C T T G C T T C T A C T T T T A T G A T A C T T A C C A T T T G T T C T T T C C G T C G Majority									
9460		9470		9480		9490		9500	
9444	A	T	A	T	T	A	G	C	T
9217	A	T	A	T	T	A	G	C	T
9449	A	T	A	T	T	A	G	C	T
9449	A	T	A	T	T	A	G	C	T
9451	A	T	A	T	T	A	G	C	T
9450	A	T	A	T	T	A	G	C	T
T A A A C A A T T G T A A G C T G T C G T T G A A A T T A T T A A A T A T A G A A A A T G A C T A Majority									
9510		9520		9530		9540		9550	
9494	T	A	A	A	C	A	A	T	T
9267	T	A	A	A	C	A	A	T	T
9499	T	A	A	A	C	A	A	T	T
9499	T	A	A	A	C	A	A	T	T
9501	T	A	A	A	C	A	A	T	T
9500	T	A	A	A	C	A	A	T	T
G T T T T G C C C T T T C C C T A T T G T C A G T C A G A T T A G T T A T T A T C A A G C T T T C T C Majority									
9560		9570		9580		9590		9600	
9544	G	T	T	T	G	C	C	T	T
9317	G	T	T	T	G	C	C	T	T
9549	G	T	T	T	G	C	C	T	T
9549	G	T	T	T	G	C	C	T	T
9551	G	T	T	T	G	C	C	T	T
9550	G	T	T	T	G	C	C	T	T
A T G C C A A T A T T A A T G C C T T T A A A A G A A C A G T T A C A A C C A T T G A C C G T A C G Majority									
9610		9620		9630		9640		9650	
594	A	T	G	C	C	A	A	T	A
367	A	T	G	C	C	A	A	T	A
599	A	T	G	C	C	A	A	T	A
599	A	T	G	C	C	A	A	T	A
601	A	T	G	C	C	A	A	T	A
600	A	T	G	C	C	A	A	T	A
G A G A T T C A A C G A C G G T T A G C T C T G G C T A A A G C C T A C A A T G C T A G T A T T T C Majority									
9660		9670		9680		9690		9700	
644	G	A	G	A	T	T	C	A	A
417	G	A	G	A	T	T	C	A	A
649	G	A	G	A	T	T	C	A	A
649	G	A	G	A	T	T	C	A	A
651	G	A	G	A	T	T	C	A	A
650	G	A	G	A	T	T	C	A	A
T G G A A C A A G T A G T C A G T C G A C T C A A T C T G T C T G A G A G A T T C T T A T T C T G Majority									
9710		9720		9730		9740		9750	
394	T	G	G	A	A	C	A	A	G
467	T	G	G	A	A	C	A	A	G
399	T	G	G	A	A	C	A	A	G
399	T	G	G	A	A	C	A	A	G
701	T	G	G	A	A	C	A	A	G
700	T	G	G	A	A	C	A	A	G
A G G A G C A A A A A A G G C A G G G T G G A C T G A A T A C G C T A G G A T G T T A G A A G T C A Majority									
9760		9770		9780		9790		9800	
144	A	G	G	A	G	C	A	A	A
517	A	G	G	A	G	C	A	A	A
149	A	G	G	A	G	C	A	A	A
149	A	G	G	A	G	C	A	A	A
151	A	G	G	A	G	C	A	A	A
150	A	G	G	A	G	C	A	A	A

FIGURE 18 AA

46/487

WO 2006/078318

Alignment Report of AI-1 alignment, using J. Hein method with Weighted residue weight table.
Thursday, July 29, 2004 5:46 PM

PCT/US2005/027239

Page 29

G A G A G C A G G T T G A C C A T G T G A T G A T T C C A A A A A T C A A T C A G G A T T T A C C A Majority									
9810		9820		9830		9840		9850	
1794	G	A	G	A	G	C	A	G	G
1567	G	A	G	A	G	C	A	G	G
1799	G	A	G	A	G	C	A	G	G
1799	G	A	G	A	G	C	A	G	G
1801	G	A	G	A	G	C	A	G	G
1800	G	A	G	A	G	C	A	G	G
A T C T A C G C T G G T T C A G A A G A G G A C A A T C T G C A A C G G G G A G T T G G T C A T C T Majority									
9860		9870		9880		9890		9900	
1844	A	T	C	T	A	C	G	C	T
1617	A	T	C	T	A	C	G	C	T
1849	A	T	C	T	A	C	G	C	T
1849	A	T	C	T	A	C	G	C	T
1851	A	T	C	T	A	C	G	C	T
1850	A	T	C	T	A	C	G	C	T
A C A A C G G A T A A G T T T G C C G A T T G G A G G G G C T T C T A C A C A T G C G G T C T T G A Majority									
9910		9920		9930		9940		9950	
1894	A	C	A	A	C	G	G	A	T
1667	A	C	A	A	C	G	G	A	T
1899	A	C	A	A	C	G	G	A	T
1899	A	C	A	A	C	G	G	A	T
901	A	C	A	A	C	G	G	A	T
900	A	C	A	A	C	G	G	A	T
G C C G G T C A A A G A G G T A T G C C A G C T G C T C G G T T G T T T G C G G A T T T G G A T A A G Majority									
9960		9970		9980		9990		10000	
944	G	C	C	G	T	C	A	A	A
717	G	C	C	G	T	C	A	A	A
949	G	C	C	G	T	C	A	A	A
949	G	C	C	G	T	C	A	A	A
951	G	C	C	G	T	C	A	A	A
950	G	C	C	G	T	C	A	A	A
A T G A A A A A A G G T G A T T A T T T T A T G T T A C C A A T C T G A A A G A A A C C T T G G C Majority									
10010		10020		10030		10040		10050	
994	A	T	G	A	A	A	A	A	G
767	A	T	G	A	A	A	A	A	G
999	A	T	G	A	A	A	A	A	G
999	A	T	G	A	A	A	A	A	G
0001	A	T	G	A	A	A	A	A	G
0000	A	T	G	A	A	A	A	A	G
T T A T C A A G T G G A T C G T A T C A T G G T G A T T G A A C C T A G C C A A T T G C A T G C C C Majority									
10060		10070		10080		10090		10100	
0044	T	T	A	T	C	A	A	G	T
817	T	T	A	T	C	A	A	G	T
0049	T	T	A	T	C	A	A	G	T
0049	T	T	A	T	C	A	A	G	T
0051	T	T	A	T	C	A	A	G	T
0050	T	T	A	T	C	A	A	G	T
T C A G C A T T G A A C A G G A T A A A G A T T A T G T T A C C C T T C T G A C C T G T A C A C C T Majority									
10110		10120		10130		10140		10150	
0094	T	C	A	G	C	A	T	T	G
867	T	C	A	G	C	A	T	T	G
0099	T	C	A	G	C	A	T	T	G
0099	T	C	A	G	C	A	T	T	G
0101	T	C	A	G	C	A	T	T	G
0100	T	C	A	G	C	A	T	T	G

FIGURE 18 AB

FIGURE 18 AC

TAAAGCGTGGTTATAATAGCCGAGCTCATCTGAGAAAACTTTTATACCTCA Majority									
10510		10520		10530		10540		10550	
10494	TAAAGGTCGTTATAATAGCCGAGCTCATCTGAGAAAACTTTTATACCTCA								2603_all.seq
10267	TAAAGGTCGTTATAATAGCCGAGCTCATCTGAGAAAACTTTTATACCTCA								18rs21_all.seq
10499	TAAAGGTCGTTATAATAGCCGAGCTCATCTGAGAAAACTTTTATACCTCA								cohl_all.seq
10499	TAAAGGTCGTTATAATAGCCGAGCTCATCTGAGAAAACTTTTATACCTCA								cjb111_all.seq
10501	TAAAGGTCGTTATAATAGCCGAGCTCATCTGAGAAAACTTTTATACCTCA								nen316_all.seq
10500	TAAAGGTCGTTATAATAGCCGAGCTCATCTGAGAAAACTTTTATACCTCA								a909_all.seq
AAGTCAGTCTAGCTTTGATATCATGAAGCCATTAGGAGTTATTCCCTTATC Majority									
10560		10570		10580		10590		10600	
10544	AAGTCAGTCTAGCTTTGATATCATGAAGCCATTAGGAGTTATTCCCTTATC								2603_all.seq
10317	AAGTCAGTCTAGCTTTGATATCATGAAGCCATTAGGAGTTATTCCCTTATC								18rs21_all.seq
10549	AAGTCAGTCTAGCTTTGATATCATGAAGCCATTAGGAGTTATTCCCTTATC								cohl_all.seq
10549	AAGTCAGTCTAGCTTTGATATCATGAAGCCATTAGGAGTTATTCCCTTATC								cjb111_all.seq
10551	AAGTCAGTCTAGCTTTGATATCATGAAGCCATTAGGAGTTATTCCCTTATC								nen316_all.seq
10550	AAGTCAGTCTAGCTTTGATATCATGAAGCCATTAGGAGTTATTCCCTTATC								a909_all.seq
TTTTAGTGGCGCGGATCCATATAGTGAATCGAGATATTTAGATCCA Majority									
10610		10620		10630		10640		10650	
10594	TTTTAGTGGCGCGGATCCATATAGTGAATCGAGATATTTAGATCCA								2603_all.seq
10367	TTTTAGTGGCGCGGATCCATATAGTGAATCGAGATATTTAGATCCA								18rs21_all.seq
10599	TTTTAGTGGCGCGGATCCATATAGTGAATCGAGATATTTAGATCCA								cohl_all.seq
10599	TTTTAGTGGCGCGGATCCATATAGTGAATCGAGATATTTAGATCCA								cjb111_all.seq
10601	TTTTAGTGGCGCGGATCCATATAGTGAATCGAGATATTTAGATCCA								nen316_all.seq
10600	TTTTAGTGGCGCGGATCCATATAGTGAATCGAGATATTTAGATCCA								a909_all.seq
AAAGTTCTATCATCCTCTTTTGGCGCCTTTTTTCCAGCAGATAATATTAA Majority									
10660		10670		10680		10690		10700	
10644	AAAGTTCTATCATCCTCTTTTGGCGCCTTTTTTCCAGCAGATAATATTAA								2603_all.seq
10417	AAAGTTCTATCATCCTCTTTTGGCGCCTTTTTTCCAGCAGATAATATTAA								18rs21_all.seq
10649	AAAGTTCTATCATCCTCTTTTGGCGCCTTTTTTCCAGCAGATAATATTAA								cohl_all.seq
10649	AAAGTTCTATCATCCTCTTTTGGCGCCTTTTTTCCAGCAGATAATATTAA								cjb111_all.seq
10651	AAAGTTCTATCATCCTCTTTTGGCGCCTTTTTTCCAGCAGATAATATTAA								nen316_all.seq
10650	AAAGTTCTATCATCCTCTTTTGGCGCCTTTTTTCCAGCAGATAATATTAA								a909_all.seq
GGTAGCTTGCTCTAAACAACCTCCAGCAGTTTATTTACACCACCTATTAAATC Majority									
10710		10720		10730		10740		10750	
0694	GGTAGCTTGCTCTAAACAACCTCCAGCAGTTTATTTACACCACCTATTAAATG								2603_all.seq
0467	GGTAGCTTGCTCTAAACAACCTCCAGCAGTTTATTTACACCACCTATTAAATG								18rs21_all.seq
0699	GGTAGCTTGCTCTAAACAACCTCCAGCAGTTTATTTACACCACCTATTAAATG								cohl_all.seq
0699	GGTAGCTTGCTCTAAACAACCTCCAGCAGTTTATTTACACCACCTATTAAATG								cjb111_all.seq
0701	GGTAGCTTGCTCTAAACAACCTCCAGCAGTTTATTTACACCACCTATTAAATG								nen316_all.seq
0700	GGTAGCTTGCTCTAAACAACCTCCAGCAGTTTATTTACACCACCTATTAAATG								a909_all.seq
CAAACTACACCACCTCAGATTCAAGCTATTGCGGACAAACGATTAAAGTCACAA Majority									
10760		10770		10780		10790		10800	
0744	CAAACTACACCACCTCAGATTCAAGCTATTGCGGACAAACGATTAAAGTCACAA								2603_all.seq
0517	CAAACTACACCACCTCAGATTCAAGCTATTGCGGACAAACGATTAAAGTCACAA								18rs21_all.seq
0749	CAAACTACACCACCTCAGATTCAAGCTATTGCGGACAAACGATTAAAGTCACAA								cohl_all.seq
0749	CAAACTACACCACCTCAGATTCAAGCTATTGCGGACAAACGATTAAAGTCACAA								cjb111_all.seq
0751	CAAACTACACCACCTCAGATTCAAGCTATTGCGGACAAACGATTAAAGTCACAA								nen316_all.seq
0750	CAAACTACACCACCTCAGATTCAAGCTATTGCGGACAAACGATTAAAGTCACAA								a909_all.seq
ATTCCGGGAATCCGATTTTGACGGTTACGGATAAAAAGAGCAGGAAGTTCAAG Majority									
10810		10820		10830		10840		10850	
0794	ATTCCGGGAATCCGATTTTGACGGTTACGGATAAAAAGAGCAGGAAGTTCAAG								2603_all.seq
0567	ATTCCGGGAATCCGATTTTGACGGTTACGGATAAAAAGAGCAGGAAGTTCAAG								18rs21_all.seq
0799	ATTCCGGGAATCCGATTTTGACGGTTACGGATAAAAAGAGCAGGAAGTTCAAG								cohl_all.seq
0799	ATTCCGGGAATCCGATTTTGACGGTTACGGATAAAAAGAGCAGGAAGTTCAAG								cjb111_all.seq
0801	ATTCCGGGAATCCGATTTTGACGGTTACGGATAAAAAGAGCAGGAAGTTCAAG								nen316_all.seq
0800	ATTCCGGGAATCCGATTTTGACGGTTACGGATAAAAAGAGCAGGAAGTTCAAG								a909_all.seq

FIGURE 18 AD

49/487

C A T T A A C A A G A T T G A C C A A G C T A A A G A A G C C T T A G T A G G T G C G A C C T T C A Majority									
10860		10870		10880		10890		10900	
10844	C A T T A A C A A G A T T G A C C A A G C T A A A G A A G C C T T A G T A G G T G C G A C C T T C A	2603_all.seq							
10617	C A T T A A C A A G A T T G A C C A A G C T A A A G A A G C C T T A G T A G G T G C G A C C T T C A	18rs21_all.seq							
10849	C A T T A A C A A G A T T G A C C A A G C T A A A G A A G C C T T A G T A G G T G C G A C C T T C A	cohl_all.seq							
10849	C A T T A A C A A G A T T G A C C A A G C T A A A G A A G C C T T A G T A G G T G C G A C C T T C A	cjb111_all.seq							
10851	C A T T A A C A A G A T T G A C C A A G C T A A A G A A G C C T T A G T A G G T G C G A C C T T C A	nem316_all.seq							
10850	C A T T A A C A A G A T T G A C C A A G C T A A A G A A G C C T T A G T A G G T G C G A C C T T C A	a909_all.seq							
C C T T G T C T A A A C G C A C A A C A G T A G C G G C A G A T C A T C A A G T A C A A G G A G A T Majority									
10910		10920		10930		10940		10950	
10894	C C T T G T C T A A A C G C A C A A C A G T A G C G G C A G A T C A T C A A G T A C A A G G A G A T	2603_all.seq							
10667	C C T T G T C T A A A C G C A C A A C A G T A G C G G C A G A T C A T C A A G T A C A A G G A G A T	18rs21_all.seq							
10899	C C T T G T C T A A A C G C A C A A C A G T A G C G G C A G A T C A T C A A G T A C A A G G A G A T	cohl_all.seq							
10899	C C T T G T C T A A A C G C A C A A C A G T A G C G G C A G A T C A T C A A G T A C A A G G A G A T	cjb111_all.seq							
10901	C C T T G T C T A A A C G C A C A A C A G T A G C G G C A G A T C A T C A A G T A C A A G G A G A T	nem316_all.seq							
10900	C C T T G T C T A A A C G C A C A A C A G T A G C G G C A G A T C A T C A A G T A C A A G G A G A T	a909_all.seq							
T T C A T T C C T G T C A G C A A A G A G A C G A C A G T C G G T C G G A C A A C C C T T A C C T T Majority									
10960		10970		10980		10990		11000	
10944	T T C A T T C C T G T C A G C A A A G A G A C G A C A G T C G G T C G G A C A A C C C T T A C C T T	2603_all.seq							
10717	T T C A T T C C T G T C A G C A A A G A G A C G A C A G T C G G T C G G A C A A C C C T T A C C T T	18rs21_all.seq							
10949	T T C A T T C C T G T C A G C A A A G A G A C G A C A G T C G G T C G G A C A A C C C T T A C C T T	cohl_all.seq							
10949	T T C A T T C C T G T C A G C A A A G A G A C G A C A G T C G G T C G G A C A A C C C T T A C C T T	cjb111_all.seq							
10951	T T C A T T C C T G T C A G C A A A G A G A C G A C A G T C G G T C G G A C A A C C C T T A C C T T	nem316_all.seq							
10950	T T C A T T C C T G T C A G C A A A G A G A C G A C A G T C G G T C G G A C A A C C C T T A C C T T	a909_all.seq							
T G A C A A C C T T A A A C C T G G A T T T T A T G A C C T T A A A G A A A C G A A A G C G C C G A Majority									
11010		11020		11030		11040		11050	
0994	T G A C A A C C T T A A A C C T G G A T T T T A T G A C C T T A A A G A A A C G A A A G C G C C G A	2603_all.seq							
0767	T G A C A A C C T T A A A C C T G G A T T T T A T G A C C T T A A A G A A A C G A A A G C G C C G A	18rs21_all.seq							
0999	T G A C A A C C T T A A A C C T G G A T T T T A T G A C C T T A A A G A A A C G A A A G C G C C G A	cohl_all.seq							
0999	T G A C A A C C T T A A A C C T G G A T T T T A T G A C C T T A A A G A A A C G A A A G C G C C G A	cjb111_all.seq							
1001	T G A C A A C C T T A A A C C T G G A T T T T A T G A C C T T A A A G A A A C G A A A G C G C C G A	nem316_all.seq							
1000	T G A C A A C C T T A A A C C T G G A T T T T A T G A C C T T A A A G A A A C G A A A G C G C C G A	a909_all.seq							
A T G C T T A C G T A C T T G A T C C T A A G A C T T A T G T T G T G G T C G T T C A A A A T T C A Majority									
11060		11070		11080		11090		11100	
1044	A T G C T T A C G T A C T T G A T C C T A A G A C T T A T G T T G T G G T C G T T C A A A A T T C A	2603_all.seq							
3817	A T G C T T A C G T A C T T G A T C C T A A G A C T T A T G T T G T G G T C G T T C A A A A T T C A	18rs21_all.seq							
1049	A T G C T T A C G T A C T T G A T C C T A A G A C T T A T G T T G T G G T C G T T C A A A A T T C A	cohl_all.seq							
1049	A T G C T T A C G T A C T T G A T C C T A A G A C T T A T G T T G T G G T C G T T C A A A A T T C A	cjb111_all.seq							
1051	A T G C T T A C G T A C T T G A T C C T A A G A C T T A T G T T G T G G T C G T T C A A A A T T C A	nem316_all.seq							
1050	A T G C T T A C G T A C T T G A T C C T A A G A C T T A T G T T G T G G T C G T T C A A A A T T C A	a909_all.seq							
G G A A A A A C G A C A A T T G T G G A T G A A G C T A A C T T C A A A G A G G C T G A T T A C C C Majority									
11110		11120		11130		11140		11150	
1094	G G A A A A A C G A C A A T T G T G G A T G A A G C T A A C T T C A A A G A G G C T G A T T A C C C	2603_all.seq							
1867	G G A A A A A C G A C A A T T G T G G A T G A A G C T A A C T T C A A A G A G G C T G A T T A C C C	18rs21_all.seq							
1099	G G A A A A A C G A C A A T T G T G G A T G A A G C T A A C T T C A A A G A G G C T G A T T A C C C	cohl_all.seq							
1099	G G A A A A A C G A C A A T T G T G G A T G A A G C T A A C T T C A A A G A G G C T G A T T A C C C	cjb111_all.seq							
1101	G G A A A A A C G A C A A T T G T G G A T G A A G C T A A C T T C A A A G A G G C T G A T T A C C C	nem316_all.seq							
1100	G G A A A A A C G A C A A T T G T G G A T G A A G C T A A C T T C A A A G A G G C T G A T T A C C C	a909_all.seq							
A A T G C C T G A T A A T A C C A C C C A T G T G G A G T G C C T A G C G T T G C T A C A A C G A A Majority									
11160		11170		11180		11190		11200	
144	A A T G C C T G A T A A T A C C A G C C A T G T G G A G T G C C T A G C G T T G C T A C A A C G A A	2603_all.seq							
917	A A T G C C T G A T A A T A C C A G C C A T G T G G A G T G C C T A G C G T T G C T A C A A C G A A	18rs21_all.seq							
149	A A T G C C T G A T A A T A C C A G C C A T G T G G A G T G C C T A G C G T T G C T A C A A C G A A	cohl_all.seq							
149	A A T G C C T G A T A A T A C C A G C C A T G T G G A G T G C C T A G C G T T G C T A C A A C G A A	cjb111_all.seq							
151	A A T G C C T G A T A A T A C C A G C C A T G T G G A G T G C C T A G C G T T G C T A C A A C G A A	nem316_all.seq							
150	A A T G C C T G A T A A T A C C A G C C A T G T G G A G T G C C T A G C G T T G C T A C A A C G A A	a909_all.seq							

FIGURE 18 AE

50/487

G C A A A G G G T A A A A A T C C T T T A T T T T A A G C A C T T T T T C A A G C A T T T T G T C T Majority									
11210		11220		11230		11240		11250	
11194	G C A A A G G G T A A A A A T C C T T T A T T T T A A G C A C T T T T T C A A G C A T T T T G T C T 2603_all.seq								
10967	G C A A A G G G T A A A A A T C C T T T A T T T T A A G C A C T T T T T C A A G C A T T T T G T C T 18rs21_all.seq								
11199	G C A A A G G G T A A A A A T C C T T T A T T T T A A G C A C T T T T T C A A G C A T T T T G T C T cohl_all.seq								
11199	G C A A A G G G T A A A A A T C C T T T A T T T T A A G C A C T T T T T C A A G C A T T T T G T C T cjb111_all.seq								
11201	G C A A A G G G T A A A A A T C C T T T A T T T T A A G C A C T T T T T C A A G C A T T T T G T C T nem316_all.seq								
11200	G C A A A G G G T A A A A A T C C T T T A T T T T A A G C A C T T T T T C A A G C A T T T T G T C T a909_all.seq								
T T A T T G A A A A G A G T G A T T T T A A C A T A A A A A A G G T A T T A A A A A C A T A T T G Majority									
11260		11270		11280		11290		11300	
11244	T T A T T G A A A A G A G T G A T T T T A A C A T A A A A A A G G T A T T A A A A A C A T A T T G 2603_all.seq								
11017	T T A T T G A A A A G A G T G A T T T T A A C A T A A A A A A G G T A T T A A A A A C A T A T T G 18rs21_all.seq								
11249	T T A T T G A A A A G A G T G A T T T T A A C A T A A A A A A G G T A T T A A A A A C A T A T T G cohl_all.seq								
11249	T T A T T G A A A A G A G T G A T T T T A A C A T A A A A A A G G T A T T A A A A A C A T A T T G cjb111_all.seq								
11251	T T A T T G A A A A G A G T G A T T T T A A C A T A A A A A A G G T A T T A A A A A C A T A T T G nem316_all.seq								
11250	T T A T T G A A A A G A G T G A T T T T A A C A T A A A A A A G G T A T T A A A A A C A T A T T G a909_all.seq								
A C C T G A C C G T T T G T T T T G A A G T G C C T T G C G T A G A C A A A A A A A T A G A T A C G Majority									
11310		11320		11330		11340		11350	
11294	A C C T G A C C G T T T G T T T T G A A G T G C C T T G C G T A G A C A A A A A A A T A G A T A C G 2603_all.seq								
11067	A C C T G A C C G T T T G T T T T G A A G T G C C T T G C G T A G A C A A A A A A A T A G A T A C G 18rs21_all.seq								
11299	A C C T G A C C G T T T G T T T T G A A G T G C C T T G C G T A G A C A A A A A A A T A G A T A C G cohl_all.seq								
11299	A C C T G A C C G T T T G T T T T G A A G T G C C T T G C G T A G A C A A A A A A A T A G A T A C G cjb111_all.seq								
11301	A C C T G A C C G T T T G T T T T G A A G T G C C T T G C G T A G A C A A A A A A A T A G A T A C G nem316_all.seq								
11300	A C C T G A C C G T T T G T T T T G A A G T G C C T T G C G T A G A C A A A A A A A T A G A T A C G a909_all.seq								
T C A G A T A A A T T T C T G G C A T T A C G A G A A C A T T T T T A G A G T G T T C T C T T T T T Majority									
11360		11370		11380		11390		11400	
11344	T C A G A T A A A T T T C T G G C A T T A C G A G A A C A T T T T T A G A G T G T T C T C T T T T T 2603_all.seq								
11117	T C A G A T A A A T T T C T G G C A T T A C G A G A A C A T T T T T A G A G T G T T C T C T T T T T 18rs21_all.seq								
11349	T C A G A T A A A T T T C T G G C A T T A C G A G A A C A T T T T T A G A G T G T T C T C T T T T T cohl_all.seq								
11349	T C A G A T A A A T T T C T G G C A T T A C G A G A A C A T T T T T A G A G T G T T C T C T T T T T cjb111_all.seq								
11351	T C A G A T A A A T T T C T G G C A T T A C G A G A A C A T T T T T A G A G T G T T C T C T T T T T nem316_all.seq								
11350	T C A G A T A A A T T T C T G G C A T T A C G A G A A C A T T T T T A G A G T G T T C T C T T T T T a909_all.seq								
T T A G T T T A C G G A G G A A A A A T A T A T A T G G A A A A A C A G G A T T C A C G A G T T C T Majority									
11410		11420		11430		11440		11450	
11394	T T A G T T T A C G G A G G A A A A A T A T A T A T G G A A A A A C A G G A T T C A C G A G T T C T 2603_all.seq								
11167	T T A G T T T A C G G A G G A A A A A T A T A T A T G G A A A A A C A G G A T T C A C G A G T T C T 18rs21_all.seq								
11399	T T A G T T T A C G G A G G A A A A A T A T A T A T G G A A A A A C A G G A T T C A C G A G T T C T cohl_all.seq								
11399	T T A G T T T A C G G A G G A A A A A T A T A T A T G G A A A A A C A G G A T T C A C G A G T T C T cjb111_all.seq								
1401	T T A G T T T A C G G A G G A A A A A T A T A T A T G G A A A A A C A G G A T T C A C G A G T T C T nem316_all.seq								
1400	T T A G T T T A C G G A G G A A A A A T A T A T A T G G A A A A A C A G G A T T C A C G A G T T C T a909_all.seq								
C A T C C A T T G G G A G G G G A A T T C T G G G G A C A A G C T C A T T G A A C A C C A A A C C A Majority									
11460		11470		11480		11490		11500	
1444	C A T C C A T T G G G A G G G G A A T T C T G G G G A C A A G C T C A T T G A A C A C C A A A C C A 2603_all.seq								
1217	C A T C C A T T G G G A G G G G A A T T C T G G G G A C A A G C T C A T T G A A C A C C A A A C C A 18rs21_all.seq								
1449	C A T C C A T T G G G A G G G G A A T T C T G G G G A C A A G C T C A T T G A A C A C C A A A C C A cohl_all.seq								
1449	C A T C C A T T G G G A G G G G A A T T C T G G G G A C A A G C T C A T T G A A C A C C A A A C C A cjb111_all.seq								
1451	C A T C C A T T G G G A G G G G A A T T C T G G G G A C A A G C T C A T T G A A C A C C A A A C C A nem316_all.seq								
1450	C A T C C A T T G G G A G G G G A A T T C T G G G G A C A A G C T C A T T G A A C A C C A A A C C A a909_all.seq								
G C C C A A C G G G G T G G T A C T A C C A A G T C G A T C G T A G C T T T A G T C A A C C A A A A Majority									
11510		11520		11530		11540		11550	
1494	G C C C A A C G G G G T G G T A C T A C C A A G T C G A T C G T A G C T T T A G T C A A C C A A A A 2603_all.seq								
1267	G C C C A A C G G G G T G G T A C T A C C A A G T C G A T C G T A G C T T T A G T C A A C C A A A A 18rs21_all.seq								
1499	G C C C A A C G G G G T G G T A C T A C C A A G T C G A T C G T A G C T T T A G T C A A C C A A A A cohl_all.seq								
1499	G C C C A A C G G G G T G G T A C T A C C A A G T C G A T C G T A G C T T T A G T C A A C C A A A A cjb111_all.seq								
1501	G C C C A A C G G G G T G G T A C T A C C A A G T C G A T C G T A G C T T T A G T C A A C C A A A A nem316_all.seq								
1500	G C C C A A C G G G G T G G T A C T A C C A A G T C G A T C G T A G C T T T A G T C A A C C A A A A a909_all.seq								

FIGURE 18 AF

51/487

G G C G A A C C G C C C A G A A T G A T C G A A A G G C A C T A G A A A G T G T C C G T A A T G A T Majority									
11560		11570		11580		11590		11600	
11544	G G C G A A C C G C C C A G A A T G A T C C A A A G G C A C T A G A A A G T G T C C G T A A T G A T	2603_all.seq							
11547	G G C G A A C C G C C C A G A A T G A T C C A A A G G C A C T A G A A A G T G T C C G T A A T G A T	18rs21_all.seq							
11549	G G C G A A C C G C C C A G A A T G A T C C A A A G G C A C T A G A A A G T G T C C G T A A T G A T	cohl1_all.seq							
11551	G G C G A A C C G C C C A G A A T G A T C C A A A G G C A C T A G A A A G T G T C C G T A A T G A T	cjb111_all.seq							
11550	G G C G A A C C G C C C A G A A T G A T C C A A A G G C A C T A G A A A G T G T C C G T A A T G A T	nem316_all.seq							
T C G A T T T C G G G C G G T G A T G A T G T C A T G G G T T A T G C T T A T A G C A A A T G T A C Majority									
11610		11620		11630		11640		11650	
11594	T C G A T T T C G G G C G G T G A T G A T G T C A T G G G T T A T G C T T A T A G C A A A T G T A C	2603_all.seq							
11367	T C G A T T T C G G G C G G T G A T G A T G T C A T G G G T T A T G C T T A T A G C A A A T G T A C	18rs21_all.seq							
11599	T C G A T T T C G G G C G G T G A T G A T G T C A T G G G T T A T G C T T A T A G C A A A T G T A C	cohl1_all.seq							
11599	T C G A T T T C G G G C G G T G A T G A T G T C A T G G G T T A T G C T T A T A G C A A A T G T A C	cjb111_all.seq							
11601	T C G A T T T C G G G C G G T G A T G A T G T C A T G G G T T A T G C T T A T A G C A A A T G T A C	nem316_all.seq							
11600	T C G A T T T C G G G C G G T G A T G A T G T C A T G G G T T A T G C T T A T A G C A A A T G T A C	a909_all.seq							
T T G G G G A G T T G C G G C A C G A A T T A A T C A G T G G G A C T G A A A C T C A A A G G T T G Majority									
11660		11670		11680		11690		11700	
1644	T T G G G G A G T T G C G G C A C G A A T T A A T C A G T G G G A C T G A A A C T C A A A G G T T G	2603_all.seq							
1417	T T G G G G A G T T G C G G C A C G A A T T A A T C A G T G G G A C T G A A A C T C A A A G G T T G	18rs21_all.seq							
1649	T T G G G G A G T T G C G G C A C G A A T T A A T C A G T G G G A C T G A A A C T C A A A G G T T G	cohl1_all.seq							
1649	T T G G G G A G T T G C G G C A C G A A T T A A T C A G T G G G A C T G A A A C T C A A A G G T T G	cjb111_all.seq							
1651	T T G G G G A G T T G C G G C A C G A A T T A A T C A G T G G G A C T G A A A C T C A A A G G T T G	nem316_all.seq							
1650	T T G G G G A G T T G C G G C A C G A A T T A A T C A G T G G G A C T G A A A C T C A A A G G T T G	a909_all.seq							
A A A T G G T G A G A A G A T T A C C A T T A C C A G T T C A A T G G G A A A T G G T C A G G A T T Majority									
11710		11720		11730		11740		11750	
1694	A A A T G G T G A G A A G A T T A C C A T T A C C A G T T C A A T G G G A A A T G G T C A G G A T T	2603_all.seq							
1467	A A A T G G T G A G A A G A T T A C C A T T A C C A G T T C A A T G G G A A A T G G T C A G G A T T	18rs21_all.seq							
1699	A A A T G G T G A G A A G A T T A C C A T T A C C A G T T C A A T G G G A A A T G G T C A G G A T T	cohl1_all.seq							
1699	A A A T G G T G A G A A G A T T A C C A T T A C C A G T T C A A T G G G A A A T G G T C A G G A T T	cjb111_all.seq							
1701	A A A T G G T G A G A A G A T T A C C A T T A C C A G T T C A A T G G G A A A T G G T C A G G A T T	nem316_all.seq							
1700	A A A T G G T G A G A A G A T T A C C A T T A C C A G T T C A A T G G G A A A T G G T C A G G A T T	a909_all.seq							
G G G T T G G A A C A G C C G A A A G A C T A G A T G G T G A A A C T G A T A C A G T T C C A A A A Majority									
11760		11770		11780		11790		11800	
1744	G G G T T G G A A C A G C C G A A A G A C T A G A T G G T G A A A C T G A T A C A G T T C C A A A A	2603_all.seq							
1517	G G G T T G G A A C A G C C G A A A G A C T A G A T G G T G A A A C T G A T A C A G T T C C A A A A	18rs21_all.seq							
1749	G G G T T G G A A C A G C C G A A A G A C T A G A T G G T G A A A C T G A T A C A G T T C C A A A A	cohl1_all.seq							
1749	G G G T T G G A A C A G C C G A A A G A C T A G A T G G T G A A A C T G A T A C A G T T C C A A A A	cjb111_all.seq							
1751	G G G T T G G A A C A G C C G A A A G A C T A G A T G G T G A A A C T G A T A C A G T T C C A A A A	nem316_all.seq							
1750	G G G T T G G A A C A G C C G A A A G A C T A G A T G G T G A A A C T G A T A C A G T T C C A A A A	a909_all.seq							
G A A G C T A C T A T T C T C T C T T T T A G G A A A C T A G T T A T G C T T C G T A T A T A G C Majority									
11810		11820		11830		11840		11850	
794	G A A G C T A C T A T T C T C T C T T T T A G G A A A C T A G T T A T G G T T C G T A T A T A G C	2603_all.seq							
567	G A A G C T A C T A T T C T C T C T T T T A G G A A A C T A G T T A T G G T T C G T A T A T A G C	18rs21_all.seq							
799	G A A G C T A C T A T T C T C T C T T T T A G G A A A C T A G T T A T G G T T C G T A T A T A G C	cohl1_all.seq							
799	G A A G C T A C T A T T C T C T C T T T T A G G A A A C T A G T T A T G G T T C G T A T A T A G C	cjb111_all.seq							
801	G A A G C T A C T A T T C T C T C T T T T A G G A A A C T A G T T A T G G T T C G T A T A T A G C	nem316_all.seq							
800	G A A G C T A C T A T T C T C T C T T T T A G G A A A C T A G T T A T G G T T C G T A T A T A G C	a909_all.seq							
C T A C G G A A C T A T A T C T T T C G T C A C A T T A C A T C T A C A G A T A G T A C C A T G A A Majority									
11860		11870		11880		11890		11900	
844	C T A C G G A A C T A T A T C T T T C G T C A C A T T A C A T C T A C A G A T A G T A C C A T G A A	2603_all.seq							
617	C T A C G G A A C T A T A T C T T T C G T C A C A T T A C A T C T A C A G A T A G T A C C A T G A A	18rs21_all.seq							
849	C T A C G G A A C T A T A T C T T T C G T C A C A T T A C A T C T A C A G A T A G T A C C A T G A A	cohl1_all.seq							
849	C T A C G G A A C T A T A T C T T T C G T C A C A T T A C A T C T A C A G A T A G T A C C A T G A A	cjb111_all.seq							
851	C T A C G G A A C T A T A T C T T T C G T C A C A T T A C A T C T A C A G A T A G T A C C A T G A A	nem316_all.seq							
850	C T A C G G A A C T A T A T C T T T C G T C A C A T T A C A T C T A C A G A T A G T A C C A T G A A	a909_all.seq							

FIGURE 18 AG

TTTTGCTTATATGACCAAGTAAAGTGAGGATATACTAACAAATGAAATAT										Majority
11910		11920		11930		11940		11950		
11894	TTTTGCTTATATGACCAAGTAAAGTGAGGATATACTAACAAATGAAATAT									2603_all.seq
11667	TTTTGCTTATATGACCAAGTAAAGTGAGGATATACTAACAAATGAAATAT									18rs21_all.seq
11899	TTTTGCTTATATGACCAAGTAAAGTGAGGATATACTAACAAATGAAATAT									cohl_all.seq
11899	TTTTGCTTATATGACCAAGTAAAGTGAGGATATACTAACAAATGAAATAT									cjb111_all.seq
11901	TTTTGCTTATATGACCAAGTAAAGTGAGGATATACTAACAAATGAAATAT									nen316_all.seq
11900	TTTTGCTTATATGACCAAGTAAAGTGAGGATATACTAACAAATGAAATAT									a909_all.seq
TTATTATCGTATTTGTCCATTTTATCGAAAAGTTTG-CATATTATCATTAT										Majority
11960		11970		11980		11990		12000		
11944	TTATTATCGTATTTGTCCATTTTATCGAAAAGTTTG-CATATTATCATTAT									2603_all.seq
11717	TTATTATCGTATTTGTCCATTTTATCGAAAAGTTTG-CATATTATCATTAT									18rs21_all.seq
11949	TTATTATCGTATTTGTCCATTTTATCGAAAAGTTTG-CATATTATCATTAT									cohl_all.seq
11949	TTATTATCGTATTTGTCCATTTTATCGAAAAGTTTG-CATATTATCATTAT									cjb111_all.seq
11951	TTATTATCGTATTTGTCCATTTTATCGAAAAGTTTG-CATATTATCATTAT									nen316_all.seq
11950	TTATTATCGTATTTGTCCATTTTATCGAAAAGTTTG-CATATTATCATTAT									a909_all.seq
GTTTGATAAAGATGCAAAATATAATGATAGTAGGAGCTAAATATGGATATTT										Majority
12010		12020		12030		12040		12050		
11994	GTTTGATAAAGATGCAAAATATAATGATAGTAGGAGCTAAATATGGATATTT									2603_all.seq
11767	GTTTGATAAAGATGCAAAATATAATGATAGTAGGAGCTAAATATGGATATTT									18rs21_all.seq
11999	GTTTGATAAAGATGCAAAATATAATGATAGTAGGAGCTAAATATGGATATTT									cohl_all.seq
11999	GTTTGATAAAGATGCAAAATATAATGATAGTAGGAGCTAAATATGGATATTT									cjb111_all.seq
12001	GTTTGATAAAGATGCAAAATATAATGATAGTAGGAGCTAAATATGGATATTT									nen316_all.seq
12000	GTTTGATAAAGATGCAAAATATAATGATAGTAGGAGCTAAATATGGATATTT									a909_all.seq
AAAAAATCAAGAGTATCCTAAGTGCTTTTCCATTTTGAAATTCAAAATATAG										Majority
12060		12070		12080		12090		12100		
12044	AAAAAATCAAGAGTATCCTAAGTGCTTTTCCATTTTGAAATTCAAAATATAG									2603_all.seq
11817	AAAAAATCAAGAGTATCCTAAGTGCTTTTCCATTTTGAAATTCAAAATATAG									18rs21_all.seq
12049	AAAAAATCAAGAGTATCCTAAGTGCTTTTCCATTTTGAAATTCAAAATATAG									cohl_all.seq
12049	AAAAAATCAAGAGTATCCTAAGTGCTTTTCCATTTTGAAATTCAAAATATAG									cjb111_all.seq
12051	AAAAAATCAAGAGTATCCTAAGTGCTTTTCCATTTTGAAATTCAAAATATAG									nen316_all.seq
12050	AAAAAATCAAGAGTATCCTAAGTGCTTTTCCATTTTGAAATTCAAAATATAG									a909_all.seq
CTAATAGTTCTAGAACTTCTAATTGTTTTTCTGTCGACGATATGAATTTTC										Majority
12110		12120		12130		12140		12150		
2094	CTAATAGTTCTAGAACTTCTAATTGTTTTTCTGTCGACGATATGAATTTTC									2603_all.seq
1867	CTAATAGTTCTAGAACTTCTAATTGTTTTTCTGTCGACGATATGAATTTTC									18rs21_all.seq
2099	CTAATAGTTCTAGAACTTCTAATTGTTTTTCTGTCGACGATATGAATTTTC									cohl_all.seq
2099	CTAATAGTTCTAGAACTTCTAATTGTTTTTCTGTCGACGATATGAATTTTC									cjb111_all.seq
2101	CTAATAGTTCTAGAACTTCTAATTGTTTTTCTGTCGACGATATGAATTTTC									nen316_all.seq
2100	CTAATAGTTCTAGAACTTCTAATTGTTTTTCTGTCGACGATATGAATTTTC									a909_all.seq
AATCTTAACTGTTAGGATTCCACCTCCCTTTGCTTAAAGAAAAAAGGTC A										Majority
12160		12170		12180		12190		12200		
2144	AATCTTAACTGTTAGGATTCCACCTCCCTTTGCTTAAAGAAAAAAGGTC A									2603_all.seq
1917	AATCTTAACTGTTAGGATTCCACCTCCCTTTGCTTAAAGAAAAAAGGTC A									18rs21_all.seq
2149	AATCTTAACTGTTAGGATTCCACCTCCCTTTGCTTAAAGAAAAAAGGTC A									cohl_all.seq
2149	AATCTTAACTGTTAGGATTCCACCTCCCTTTGCTTAAAGAAAAAAGGTC A									cjb111_all.seq
2151	AATCTTAACTGTTAGGATTCCACCTCCCTTTGCTTAAAGAAAAAAGGTC A									nen316_all.seq
2150	AATCTTAACTGTTAGGATTCCACCTCCCTTTGCTTAAAGAAAAAAGGTC A									a909_all.seq
GGTCGTTTTAGATAA ACTTTTGTCAAACAAGCTCAAGCTATCTAAAAATAGTT										Majority
12210		12220		12230		12240		12250		
2194	GGTCGTTTTAGATAA ACTTTTGTCAAACAAGCTCAAGCTATCTAAAAATAGTT									2603_all.seq
1967	GGTCGTTTTAGATAA ACTTTTGTCAAACAAGCTCAAGCTATCTAAAAATAGTT									18rs21_all.seq
2199	GGTCGTTTTAGATAA ACTTTTGTCAAACAAGCTCAAGCTATCTAAAAATAGTT									cohl_all.seq
2199	GGTCGTTTTAGATAA ACTTTTGTCAAACAAGCTCAAGCTATCTAAAAATAGTT									cjb111_all.seq
2201	GGTCGTTTTAGATAA ACTTTTGTCAAACAAGCTCAAGCTATCTAAAAATAGTT									nen316_all.seq
2200	GGTCGTTTTAGATAA ACTTTTGTCAAACAAGCTCAAGCTATCTAAAAATAGTT									a909_all.seq

FIGURE 18 AH

53/487

T G A A A T G G G C A T T A C T C T A G T T T T T A A T A A G C T A T C T G A T G A G C A G A A G C Majority									
12260		12270		12280		12290		12300	
12244	T	G	A	A	A	T	G	G	G
12017	T	G	A	A	A	T	G	G	G
12249	T	G	A	A	A	T	G	G	G
12249	T	G	A	A	A	T	G	G	G
12251	T	G	A	A	A	T	G	G	G
12250	T	G	A	A	A	T	G	G	G
A G A A G T T A A T G C A T G T T G G G A A G T C T T A T T T T G A C T A T C A A G A A A A T G C T Majority									
12310		12320		12330		12340		12350	
12294	A	G	A	A	G	T	T	A	A
12067	A	G	A	A	G	T	T	A	A
12299	A	G	A	A	G	T	T	A	A
12299	A	G	A	A	G	T	T	A	A
12301	A	G	A	A	G	T	T	A	A
12300	A	G	A	A	G	T	T	A	A
C T T A T C C C A C A A T T A G G T T T T C T A T A T T C T A A A T T A A C T A A A A A A A T T G A Majority									
12360		12370		12380		12390		12400	
2344	C	T	T	A	T	C	C	C	A
2117	C	T	T	A	T	C	C	C	A
2349	C	T	T	A	T	C	C	C	A
2349	C	T	T	A	T	C	C	C	A
2351	C	T	T	A	T	C	C	C	A
2350	C	T	T	A	T	C	C	C	A
A C T T G A T A A T C G G T T G T C T C C G A C T G A A C A A A A G T T A T T G A T T A C C T T A T Majority									
12410		12420		12430		12440		12450	
2394	A	C	T	T	G	A	T	A	A
2167	A	C	T	T	G	A	T	A	A
2399	A	C	T	T	G	A	T	A	A
2399	A	C	T	T	G	A	T	A	A
2401	A	C	T	T	G	A	T	A	A
2400	A	C	T	T	G	A	T	A	A
T A T T A C A T A C T A A A G G T T T A A T C A T T G A T A T G T A A G A A G T A A G T C A G C T A Majority									
12460		12470		12480		12490		12500	
2444	T	A	T	T	A	C	A	T	A
2217	T	A	T	T	A	C	A	T	A
2449	T	A	T	T	A	C	A	T	A
2449	T	A	T	T	A	C	A	T	A
2451	T	A	T	T	A	C	A	T	A
2450	T	A	T	T	A	C	A	T	A
A C C G A T C T T T C T A T T C T A A A A C T T A T A T T G T T G C T T T A G A A A T T T T A A A G Majority									
12510		12520		12530		12540		12550	
2494	A	C	C	G	A	T	C	T	T
2267	A	C	C	G	A	T	C	T	T
2499	A	C	C	G	A	T	C	T	T
2499	A	C	C	G	A	T	C	T	T
2501	A	C	C	G	A	T	C	T	T
2500	A	C	C	G	A	T	C	T	T
A G C G T G C A T G G C T T C A T A A T A A A C A G A A A T C T T A C C A A T T T G C G A A G C C A Majority									
12560		12570		12580		12590		12600	
2544	A	G	C	G	T	G	C	A	T
2317	A	G	C	G	T	G	C	A	T
2549	A	G	C	G	T	G	C	A	T
2549	A	G	C	G	T	G	C	A	T
2551	A	G	C	G	T	G	C	A	T
2550	A	G	C	G	T	G	C	A	T

FIGURE 18 AI

54/487

A A A A A T A T G C A T A T T T G A A G A G T C C A A A G A T C T A A T A G A T A G T C C A G T T A G Majority									
12610		12620		12630		12640		12650	
2594	A A A A A T A T G A T A T T T G A A G A G T C C A A A G A T C T A A T A G A T A G T C C A G T T A G								2603_all.seq
2367	A A A A A T A T G A T A T T T G A A G A G T C C A A A G A T C T A A T A G A T A G T C C A G T T A G								18rs21_all.seq
2599	A A A A A T A T G A T A T T T G A A G A G T C C A A A G A T C T A A T A G A T A G T C C A G T T A G								cohl_all.seq
2599	A A A A A T A T G A T A T T T G A A G A G T C C A A A G A T C T A A T A G A T A G T C C A G T T A G								cjb111_all.seq
2601	A A A A A T A T G A T A T T T G A A G A G T C C A A A G A T C T A A T A G A T A G T C C A G T T A G								mem316_all.seq
2600	A A A A A T A T G A T A T T T G A A G A G T C C A A A G A T C T A A T A G A T A G T C C A G T T A G								a909_all.seq
A G A A G C C G T T G A T T A T A A C T G A T A A G G A T T T T C A A A A A T T A A A A C A A G A G C Majority									
12660		12670		12680		12690		12700	
2644	A G A A G C C G T T G A T T A T A A G T G A T A A G G A T T T T C A A A A A T T A A A A C A A G A G C								2603_all.seq
2417	A G A A G C C G T T G A T T A T A A G T G A T A A G G A T T T T C A A A A A T T A A A A C A A G A G C								18rs21_all.seq
2649	A G A A G C C G T T G A T T A T A A G T G A T A A G G A T T T T C A A A A A T T A A A A C A A G A G C								cohl_all.seq
2649	A G A A G C C G T T G A T T A T A A G T G A T A A G G A T T T T C A A A A A T T A A A A C A A G A G C								cjb111_all.seq
2651	A G A A G C C G T T G A T T A T A A G T G A T A A G G A T T T T C A A A A A T T A A A A C A A G A G C								mem316_all.seq
2650	A G A A G C C G T T G A T T A T A A G T G A T A A G G A T T T T C A A A A A T T A A A A C A A G A G C								a909_all.seq
T A T T A T T T T A A C C G A C T T A T T T T A A A G A C T T A T C A T A T C T A G G C T T G C T T Majority									
12710		12720		12730		12740		12750	
2694	T A T T A T T T T A A C C G A C T T A T T T T A A A G A C T T A T C A T A T C T A G G C T T G C T T								2603_all.seq
2467	T A T T A T T T T A A C C G A C T T A T T T T A A A G A C T T A T C A T A T C T A G G C T T G C T T								18rs21_all.seq
2699	T A T T A T T T T A A C C G A C T T A T T T T A A A G A C T T A T C A T A T C T A G G C T T G C T T								cohl_all.seq
2699	T A T T A T T T T A A C C G A C T T A T T T T A A A G A C T T A T C A T A T C T A G G C T T G C T T								cjb111_all.seq
2701	T A T T A T T T T A A C C G A C T T A T T T T A A A G A C T T A T C A T A T C T A G G C T T G C T T								mem316_all.seq
2700	T A T T A T T T T A A C C G A C T T A T T T T A A A G A C T T A T C A T A T C T A G G C T T G C T T								a909_all.seq
G A T C A T T C G G A A A A A T A C G G A G A C T A T A C T A T T T T C A A G C A A A A G A T A C A A Majority									
12760		12770		12780		12790		12800	
2744	G A T C A T T C G G A A A A A T A C G G A G A C T A T A C T A T T T T C A A G C A A A A G A T A C A A								2603_all.seq
2517	G A T C A T T C G G A A A A A T A C G G A G A C T A T A C T A T T T T C A A G C A A A A G A T A C A A								18rs21_all.seq
2749	G A T C A T T C G G A A A A A T A C G G A G A C T A T A C T A T T T T C A A G C A A A A G A T A C A A								cohl_all.seq
2749	G A T C A T T C G G A A A A A T A C G G A G A C T A T A C T A T T T T C A A G C A A A A G A T A C A A								cjb111_all.seq
2751	G A T C A T T C G G A A A A A T A C G G A G A C T A T A C T A T T T T C A A G C A A A A G A T A C A A								mem316_all.seq
2750	G A T C A T T C G G A A A A A T A C G G A G A C T A T A C T A T T T T C A A G C A A A A G A T A C A A								a909_all.seq
A A G T T T C G A A T C A A G T C T T C A A C T A T A C A T C C T T C A A A G T C A T C G G C T A G Majority									
12810		12820		12830		12840		12850	
2794	A A G T T T C G A A T C A A G T C T T C A A C T A T A C A T C C T T C A A A G T C A T C G G C T A G								2603_all.seq
2567	A A G T T T C G A A T C A A G T C T T C A A C T A T A C A T C C T T C A A A G T C A T C G G C T A G								18rs21_all.seq
2799	A A G T T T C G A A T C A A G T C T T C A A C T A T A C A T C C T T C A A A G T C A T C G G C T A G								cohl_all.seq
2799	A A G T T T C G A A T C A A G T C T T C A A C T A T A C A T C C T T C A A A G T C A T C G G C T A G								cjb111_all.seq
2801	A A G T T T C G A A T C A A G T C T T C A A C T A T A C A T C C T T C A A A G T C A T C G G C T A G								mem316_all.seq
2800	A A G T T T C G A A T C A A G T C T T C A A C T A T A C A T C C T T C A A A G T C A T C G G C T A G								a909_all.seq
A G A T T T G G A A T T A T G A A C C A A T C C C T T T G A T T A C T A G A A A A A T A A A T A G C Majority									
12860		12870		12880		12890		12900	
2844	A G A T T T G G A A T T A T G A A C C A A T C C C T T T G A T T A C T A G A A A A A T A A A T A G C								2603_all.seq
2617	A G A T T T G G A A T T A T G A A C C A A T C C C T T T G A T T A C T A G A A A A A T A A A T A G C								18rs21_all.seq
2849	A G A T T T G G A A T T A T G A A C C A A T C C C T T T G A T T A C T A G A A A A A T A A A T A G C								cohl_all.seq
2849	A G A T T T G G A A T T A T G A A C C A A T C C C T T T G A T T A C T A G A A A A A T A A A T A G C								cjb111_all.seq
2851	A G A T T T G G A A T T A T G A A C C A A T C C C T T T G A T T A C T A G A A A A A T A A A T A G C								mem316_all.seq
2850	A G A T T T G G A A T T A T G A A C C A A T C C C T T T G A T T A C T A G A A A A A T A A A T A G C								a909_all.seq
T T G C A G A G G C T A A C G T G A C A C T G G T T G A T C C A A T C T C G C T T T A T T T A A C A Majority									
12910		12920		12930		12940		12950	
2894	T T G C A G A G G C T A A C G T G A C A C T G G T T G A T C C A A T C T C G C T T T A T T T A A C A								2603_all.seq
2667	T T G C A G A G G C T A A C G T G A C A C T G G T T G A T C C A A T C T C G C T T T A T T T A A C A								18rs21_all.seq
2899	T T G C A G A G G C T A A C G T G A C A C T G G T T G A T C C A A T C T C G C T T T A T T T A A C A								cohl_all.seq
2899	T T G C A G A G G C T A A C G T G A C A C T G G T T G A T C C A A T C T C G C T T T A T T T A A C A								cjb111_all.seq
2901	T T G C A G A G G C T A A C G T G A C A C T G G T T G A T C C A A T C T C G C T T T A T T T A A C A								mem316_all.seq
2900	T T G C A G A G G C T A A C G T G A C A C T G G T T G A T C C A A T C T C G C T T T A T T T A A C A								a909_all.seq

FIGURE 18 AJ

55/487

WO 2006/078318

Alignment Report of A1-1 alignment, using J. Hein method with Weighted residue weight table.
Thursday, July 29, 2004 5:46 PM.

PCT/US2005/027239

Page 38

CTAAGAAATGATGAAGACCCCTCGTATTGAAGAAAGAAAGTTGAGCAGCTAGAA Majority
12960 12970 12980 12990 13000

12944 CTAAGAAATGATGAAGACCCCTCGTATTGAAGAAAGAAAGTTGAGCAGCTAGAA 2603_all.seq
12717 CTAAGAAATGATGAAGACCCCTCGTATTGAAGAAAGAAAGTTGAGCAGCTAGAA 18rs21_all.seq
12949 CTAAGAAATGATGAAGACCCCTCGTATTGAAGAAAGAAAGTTGAGCAGCTAGAA coh1_all.seq
12949 CTAAGAAATGATGAAGACCCCTCGTATTGAAGAAAGAAAGTTGAGCAGCTAGAA cjb111_all.seq
12951 CTAAGAAATGATGAAGACCCCTCGTATTGAAGAAAGAAAGTTGAGCAGCTAGAA nem316_all.seq
12950 CTAAGAAATGATGAAGACCCCTCGTATTGAAGAAAGAAAGTTGAGCAGCTAGAA a909_all.seq

CATAAGAT

Majority

12994 CATAAGAT
12767 CATAAGAT
12999 CATAAGAT
12999 CA
13000 A
13000 CATAAGAT

2603_all.seq
18rs21_all.seq
coh1_all.seq
cjb111_all.seq
nem316_all.seq
a909_all.seq

Decoration *Decoration #1*: Shade (with solid black) residues that differ from the Consensus.

FIGURE 18 AK

Figure 19

57/487

C T T T T A T T T A C T T C A C T T T C T T A A C C A T C C T T G G C T A A A A A G A T A T A C Majority									
	460	470	480	490	500				
451	C T T T T A T T T A C T T C A C T T T C T T A A C C A A T C C T T G G C T A A A A A G A T A T A C					2603_a12.seq			
451	C T T T T A T T T A C T T C A C T T T C T T A A C C A A T C C T T G G C T A A A A A G A T A T A C					18rs21_a12.seq			
451	C T T T T A T T T A C T T C A C T T T C T T A A C C A A T C C T T G G C T A A A A A G A T A T A C					515_a12.seq			
451	C T T T T A T T T A C T T C A C T T T C T T A A C C A A T C C T T G G C T A A A A A G A T A T A C					cjb111_a12.seq			
451	C T T T T A T T T A C T T C A C T T T C T T A A C C A A T C C T T G G C T A A A A A G A T A T A C					h36b_a12.seq			
G C A G T T A G A T T C A A A A T A C C A T A A G C A A G T A T A A A A C C A G C T A A A A C A T C Majority									
	510	520	530	540	550				
501	G C A G T T A G A T T C A A A A T A C C A T A A G C A A G T A T A A A A C C A G C T A A A A C A T C					2603_a12.seq			
501	G C A G T T A G A T T C A A A A T A C C A T A A G C A A G T A T A A A A C C A G C T A A A A C A T C					18rs21_a12.seq			
501	G C A G T T A G A T T C A A A A T A C C A T A A G C A A G T A T A A A A C C A G C T A A A A C A T C					515_a12.seq			
501	G C A G T T A G A T T C A A A A T A C C A T A A G C A A G T A T A A A A C C A G C T A A A A C A T C					cjb111_a12.seq			
501	G C A G T T A G A T T C A A A A T A C C A T A A G C A A G T A T A A A A C C A G C T A A A A C A T C					h36b_a12.seq			
T G T C G G A A A A T G A A C C C C T A G G T A A A T A C G A G A T A A C C C A A T T A A A A A A A Majority									
	560	570	580	590	600				
551	T G T C G G A A A A T G A A C C C C T A G G T A A A T A C G A G A T A A C C C A A T T A A A A A A A					2603_a12.seq			
551	T G T C G G A A A A T G A A C C C C T A G G T A A A T A C G A G A T A A C C C A A T T A A A A A A A					18rs21_a12.seq			
551	T G T C G G A A A A T G A A C C C C T A G G T A A A T A C G A G A T A A C C C A A T T A A A A A A A					515_a12.seq			
551	T G T C G G A A A A T G A A C C C C T A G G T A A A T A C G A G A T A A C C C A A T T A A A A A A A					cjb111_a12.seq			
551	T G T C G G A A A A T G A A C C C C T A G G T A A A T A C G A G A T A A C C C A A T T A A A A A A A					h36b_a12.seq			
T G A G C A A A C C C A A A G T A C C T T G G C A C A A C A G T T T C C A T A T A C T C T T A G G C Majority									
	610	620	630	640	650				
601	T G A G C A A A C C C A A A G T A C C T T G G C A C A A C A G T T T C C A T A T A C T C T T A G G C					2603_a12.seq			
601	T G A G C A A A C C C A A A G T A C C T T G G C A C A A C A G T T T C C A T A T A C T C T T A G G C					18rs21_a12.seq			
601	T G A G C A A A C C C A A A G T A C C T T G G C A C A A C A G T T T C C A T A T A C T C T T A G G C					515_a12.seq			
601	T G A G C A A A C C C A A A G T A C C T T G G C A C A A C A G T T T C C A T A T A C T C T T A G G C					cjb111_a12.seq			
601	T G A G C A A A C C C A A A G T A C C T T G G C A C A A C A G T T T C C A T A T A C T C T T A G G C					h36b_a12.seq			
A T A T A G T A C T G C A A T A A A A T A A T A A T A C T C C C A A A T A T C A T A A A T G T T C C Majority									
	660	670	680	690	700				
651	A T A T A G T A C T G C A A T A A A A T A A T A A T A C T C C C A A A T A T C A T A A A T G T T C C					2603_a12.seq			
651	A T A T A G T A C T G C A A T A A A A T A A T A A T A C T C C C A A A T A T C A T A A A T G T T C C					18rs21_a12.seq			
651	A T A T A G T A C T G C A A T A A A A T A A T A A T A C T C C C A A A T A T C A T A A A T G T T C C					515_a12.seq			
651	A T A T A G T A C T G C A A T A A A A T A A T A A T A C T C C C A A A T A T C A T A A A T G T T C C					cjb111_a12.seq			
651	A T A T A G T A C T G C A A T A A A A T A A T A A T A C T C C C A A A T A T C A T A A A T G T T C C					h36b_a12.seq			
C A T C G A G T G C C C A C T G G G A A A C G A A T A G C C A C C T G C A A A T A C T A A A T G G G Majority									
	710	720	730	740	750				
701	C A T C G A G T G C C C A C T G G G A A A C G A A T A G C C A C C T G C A A A T A C T A A A T G G G					2603_a12.seq			
701	C A T C G A G T G C C C A C T G G G A A A C G A A T A G C C A C C T G C A A A T A C T A A A T G G G					18rs21_a12.seq			
701	C A T C G A G T G C C C A C T G G G A A A C G A A T A G C C A C C T G C A A A T A C T A A A T G G G					515_a12.seq			
701	C A T C G A G T G C C C A C T G G G A A A C G A A T A G C C A C C T G C A A A T A C T A A A T G G G					cjb111_a12.seq			
701	C A T C G A G T G C C C A C T G G G A A A C G A A T A G C C A C C T G C A A A T A C T A A A T G G G					h36b_a12.seq			
T T A A A G T T G G T C T T A C T C T T T T G A A A A A T A A G T T T T A A A G A A A G T A T A C A T Majority									
	760	770	780	790	800				
751	T T A A A G T T G G T C T T A C T C T T T T G A A A A A T A A G T T T T A A A G A A A G T A T A C A T					2603_a12.seq			
751	T T A A A G T T G G T C T T A C T C T T T T G A A A A A T A A G T T T T A A A G A A A G T A T A C A T					18rs21_a12.seq			
751	T T A A A G T T G G T C T T A C T C T T T T G A A A A A T A A G T T T T A A A G A A A G T A T A C A T					515_a12.seq			
751	T T A A A G T T G G T C T T A C T C T T T T G A A A A A T A A G T T T T A A A G A A A G T A T A C A T					cjb111_a12.seq			
751	T T A A A G T T G G T C T T A C T C T T T T G A A A A A T A A G T T T T A A A G A A A G T A T A C A T					h36b_a12.seq			
A T A C C A G A G A T A A T A G C A T T T A C T G C G A T A A A T C T A G C T T G A G G A T A C C A Majority									
	810	820	830	840	850				
801	A T A C C A G A G A T A A T A G C A T T T A C T G C G A T A A A T C T A G C T T G A G G A T A C C A					2603_a12.seq			
801	A T A C C A G A G A T A A T A G C A T T T A C T G C G A T A A A T C T A G C T T G A G G A T A C C A					18rs21_a12.seq			
801	A T A C C A G A G A T A A T A G C A T T T A C T G C G A T A A A T C T A G C T T G A G G A T A C C A					515_a12.seq			
801	A T A C C A G A G A T A A T A G C A T T T A C T G C G A T A A A T C T A G C T T G A G G A T A C C A					cjb111_a12.seq			
801	A T A C C A G A G A T A A T A G C A T T T A C T G C G A T A A A T C T A G C T T G A G G A T A C C A					h36b_a12.seq			
C T T C T T A A G C T A A C A G A A A G T G A C G C T C A T A A T C G C A A T A G C T A T C T G G C Majority									
	860	870	880	890	900				
851	C T T C T T A A G C T A A C A G A A A G T G A C G C T C A T A A T C G C A A T A G C T A T C T G G C					2603_a12.seq			
851	C T T C T T A A G C T A A C A G A A A G T G A C G C T C A T A A T C G C A A T A G C T A T C T G G C					18rs21_a12.seq			
851	C T T C T T A A G C T A A C A G A A A G T G A C G C T C A T A A T C G C A A T A G C T A T C T G G C					515_a12.seq			
851	C T T C T T A A G C T A A C A G A A A G T G A C G C T C A T A A T C G C A A T A G C T A T C T G G C					cjb111_a12.seq			
851	C T T C T T A A G C T A A C A G A A A G T G A C G C T C A T A A T C G C A A T A G C T A T C T G G C					h36b_a12.seq			

FIGURE 19A

58/487

TTACAGTATTACCAATCACAGTGAATTAACCTTGAAAAATCTTGTAGAAAGA Majority									
910		920		930		940		950	
901	TTACAGTATTACCAATCACAGTGAATTAACCTTGAAAAATCTTGTAGAAAGA	2603_a12.seq							
901	TTACAGTATTACCAATCACAGTGAATTAACCTTGAAAAATCTTGTAGAAAGA	18rs21_a12.seq							
901	TTACAGTATTACCAATCACAGTGAATTAACCTTGAAAAATCTTGTAGAAAGA	515_a12.seq							
901	TTACAGTATTACCAATCACAGTGAATTAACCTTGAAAAATCTTGTAGAAAGA	cjb111_a12.seq							
901	TTACAGTATTACCAATCACAGTGAATTAACCTTGAAAAATCTTGTAGAAAGA	h36b_a12.seq							
TTTGGCAACTGTCCTCTAACACTTTCTTGAATAGTTTGGTCAAATGAAAT Majority									
960		970		980		990		1000	
951	TTTGGCAACTGTCCTCTAACACTTTCTTGAATAGTTTGGTCAAATGAAAT	2603_a12.seq							
951	TTTGGCAACTGTCCTCTAACACTTTCTTGAATAGTTTGGTCAAATGAAAT	18rs21_a12.seq							
951	TTTGGCAACTGTCCTCTAACACTTTCTTGAATAGTTTGGTCAAATGAAAT	515_a12.seq							
951	TTTGGCAACTGTCCTCTAACACTTTCTTGAATAGTTTGGTCAAATGAAAT	cjb111_a12.seq							
951	TTTGGCAACTGTCCTCTAACACTTTCTTGAATAGTTTGGTCAAATGAAAT	h36b_a12.seq							
TACAGTGTGCGGGCCAATATTTGATGACCAATCCTAAACTGAAAAATAAGA Majority									
1010		1020		1030		1040		1050	
1001	TACAGTGTGCGGGCCAATATTTGATGACCAATCCTAAACTGAAAAATAAGA	2603_a12.seq							
1001	TACAGTGTGCGGGCCAATATTTGATGACCAATCCTAAACTGAAAAATAAGA	18rs21_a12.seq							
1001	TACAGTGTGCGGGCCAATATTTGATGACCAATCCTAAACTGAAAAATAAGA	515_a12.seq							
1001	TACAGTGTGCGGGCCAATATTTGATGACCAATCCTAAACTGAAAAATAAGA	cjb111_a12.seq							
1001	TACAGTGTGCGGGCCAATATTTGATGACCAATCCTAAACTGAAAAATAAGA	h36b_a12.seq							
TAATAGCAATAAATGCTTGAATAAGTTTACTATTTTGCAGAGATAACATT Majority									
1060		1070		1080		1090		1100	
1051	TAATAGCAATAAATGCTTGAATAAGTTTACTATTTTGCAGAGATAACATT	2603_a12.seq							
1051	TAATAGCAATAAATGCTTGAATAAGTTTACTATTTTGCAGAGATAACATT	18rs21_a12.seq							
1051	TAATAGCAATAAATGCTTGAATAAGTTTACTATTTTGCAGAGATAACATT	515_a12.seq							
1051	TAATAGCAATAAATGCTTGAATAAGTTTACTATTTTGCAGAGATAACATT	cjb111_a12.seq							
1051	TAATAGCAATAAATGCTTGAATAAGTTTACTATTTTGCAGAGATAACATT	h36b_a12.seq							
AGTCTTTTTTATATCTTTCTAATATTGGCAAACAAGCCACGTAAGTTAGAT Majority									
1110		1120		1130		1140		1150	
1101	AGTCTTTTTTATATCTTTCTAATATTGGCAAACAAGCCACGTAAGTTAGAT	2603_a12.seq							
1101	AGTCTTTTTTATATCTTTCTAATATTGGCAAACAAGCCACGTAAGTTAGAT	18rs21_a12.seq							
1101	AGTCTTTTTTATATCTTTCTAATATTGGCAAACAAGCCACGTAAGTTAGAT	515_a12.seq							
1101	AGTCTTTTTTATATCTTTCTAATATTGGCAAACAAGCCACGTAAGTTAGAT	cjb111_a12.seq							
1101	AGTCTTTTTTATATCTTTCTAATATTGGCAAACAAGCCACGTAAGTTAGAT	h36b_a12.seq							
AGAAAAACAATCGAAATTAAATTCCTCAACGATATTAAATGGAATAACC Majority									
1160		1170		1180		1190		1200	
1151	AGAAAAACAATCGAAATTAAATTCCTCAACGATATTAAATGGAATAACC	2603_a12.seq							
1151	AGAAAAACAATCGAAATTAAATTCCTCAACGATATTAAATGGAATAACC	18rs21_a12.seq							
1151	AGAAAAACAATCGAAATTAAATTCCTCAACGATATTAAATGGAATAACC	515_a12.seq							
1151	AGAAAAACAATCGAAATTAAATTCCTCAACGATATTAAATGGAATAACC	cjb111_a12.seq							
1151	AGAAAAACAATCGAAATTAAATTCCTCAACGATATTAAATGGAATAACC	h36b_a12.seq							
ATTGTTTAAAAGGTAATTGCTTACACCAATAAATGTTCTGATATCAAAGTT Majority									
1210		1220		1230		1240		1250	
1201	ATTGTTTAAAAGGTAATTGCTTACACCAATAAATGTTCTGATATCAAAGTT	2603_a12.seq							
1201	ATTGTTTAAAAGGTAATTGCTTACACCAATAAATGTTCTGATATCAAAGTT	18rs21_a12.seq							
1201	ATTGTTTAAAAGGTAATTGCTTACACCAATAAATGTTCTGATATCAAAGTT	515_a12.seq							
1201	ATTGTTTAAAAGGTAATTGCTTACACCAATAAATGTTCTGATATCAAAGTT	cjb111_a12.seq							
1201	ATTGTTTAAAAGGTAATTGCTTACACCAATAAATGTTCTGATATCAAAGTT	h36b_a12.seq							
AGCAAATATAGCATACAAAGGAATCGCAAAGACATAGTTGAGAGCTACCA Majority									
1260		1270		1280		1290		1300	
1251	AGCAAATATAGCATACAAAGGAATCGCAAAGACATAGTTGAGAGCTACCA	2603_a12.seq							
1251	AGCAAATATAGCATACAAAGGAATCGCAAAGACATAGTTGAGAGCTACCA	18rs21_a12.seq							
1251	AGCAAATATAGCATACAAAGGAATCGCAAAGACATAGTTGAGAGCTACCA	515_a12.seq							
1251	AGCAAATATAGCATACAAAGGAATCGCAAAGACATAGTTGAGAGCTACCA	cjb111_a12.seq							
1251	AGCAAATATAGCATACAAAGGAATCGCAAAGACATAGTTGAGAGCTACCA	h36b_a12.seq							
TAGATACGGTCAAGCTAACTGTACCAAATAGACTAGCTTTAATAAAATCT Majority									
1310		1320		1330		1340		1350	
1301	TAGATACGGTCAAGCTAACTGTACCAAATAGACTAGCTTTAATAAAATCT	2603_a12.seq							
1301	TAGATACGGTCAAGCTAACTGTACCAAATAGACTAGCTTTAATAAAATCT	18rs21_a12.seq							
1301	TAGATACGGTCAAGCTAACTGTACCAAATAGACTAGCTTTAATAAAATCT	515_a12.seq							
1301	TAGATACGGTCAAGCTAACTGTACCAAATAGACTAGCTTTAATAAAATCT	cjb111_a12.seq							
1301	TAGATACGGTCAAGCTAACTGTACCAAATAGACTAGCTTTAATAAAATCT	h36b_a12.seq							

FIGURE 19B

59/487

TTTGCAC TCTCTCTATTTT TCCAGAAAATAGCGAAACTTGTCTAAAAATAA Majority										
1360 1370 1380 1390 1400										
1351	TTTGCAC TCTCTCTATTTT TCCAGAAAATAGCGAAACTTGTCTAAAAATAA 2603_a12.seq									
1351	TTTGCAC TCTCTCTATTTT TCCAGAAAATAGCGAAACTTGTCTAAAAATAA 18rs21_a12.seq									
1351	TTTGCAC TCTCTCTATTTT TCCAGAAAATAGCGAAACTTGTCTAAAAATAA 515_a12.seq									
1351	TTTGCAC TCTCTCTATTTT TCCAGAAAATAGCGAAACTTGTCTAAAAATAA cjb111_a12.seq									
1351	TTTGCAC TCTCTCTATTTT TCCAGAAAATAGCGAAACTTGTCTAAAAATAA h36b_a12.seq									
AGCTAGAGCAACCATATTT CATCGGTA AACCAATAAACGTTTCTGGACCAC Majority										
1410 1420 1430 1440 1450										
1401	AGCTAGAGCAACCATATTT CATCGGTA AACCAATAAACGTTTCTGGACCAC 2603_a12.seq									
1401	AGCTAGAGCAACCATATTT CATCGGTA AACCAATAAACGTTTCTGGACCAC 18rs21_a12.seq									
1401	AGCTAGAGCAACCATATTT CATCGGTA AACCAATAAACGTTTCTGGACCAC 515_a12.seq									
1401	AGCTAGAGCAACCATATTT CATCGGTA AACCAATAAACGTTTCTGGACCAC cjb111_a12.seq									
1401	AGCTAGAGCAACCATATTT CATCGGTA AACCAATAAACGTTTCTGGACCAC h36b_a12.seq									
GATTAGCAAGTATAACTTTT AAAAGTGATCTTAATAAGAGTACACCATAA Majority										
1460 1470 1480 1490 1500										
1451	GATTAGCAAGTATAACTTTT AAAAGTGATCTTAATAAGAGTACACCATAA 2603_a12.seq									
1451	GATTAGCAAGTATAACTTTT AAAAGTGATCTTAATAAGAGTACACCATAA 18rs21_a12.seq									
1451	GATTAGCAAGTATAACTTTT AAAAGTGATCTTAATAAGAGTACACCATAA 515_a12.seq									
1451	GATTAGCAAGTATAACTTTT AAAAGTGATCTTAATAAGAGTACACCATAA cjb111_a12.seq									
1451	GATTAGCAAGTATAACTTTT AAAAGTGATCTTAATAAGAGTACACCATAA h36b_a12.seq									
CTTGATTTTCAAATCAAATAAAATAAAAGCAACTAACATCGGAAGGATTGA Majority										
1510 1520 1530 1540 1550										
1501	CTTGATTTTCAAATCAAATAAAATAAAAGCAACTAACATCGGAAGGATTGA 2603_a12.seq									
1501	CTTGATTTTCAAATCAAATAAAATAAAAGCAACTAACATCGGAAGGATTGA 18rs21_a12.seq									
1501	CTTGATTTTCAAATCAAATAAAATAAAAGCAACTAACATCGGAAGGATTGA 515_a12.seq									
1501	CTTGATTTTCAAATCAAATAAAATAAAAGCAACTAACATCGGAAGGATTGA cjb111_a12.seq									
1501	CTTGATTTTCAAATCAAATAAAATAAAAGCAACTAACATCGGAAGGATTGA h36b_a12.seq									
AAAATCAAACCTTTAAAAAATTTCTGCTCCTGGTATTAATGGAAATGAAACC A Majority										
1560 1570 1580 1590 1600										
1551	AAAATCAAACCTTTAAAAAATTTCTGCTCCTGGTATTAATGGAAATGAAACC A 2603_a12.seq									
1551	AAAATCAAACCTTTAAAAAATTTCTGCTCCTGGTATTAATGGAAATGAAACC A 18rs21_a12.seq									
1551	AAAATCAAACCTTTAAAAAATTTCTGCTCCTGGTATTAATGGAAATGAAACC A 515_a12.seq									
1551	AAAATCAAACCTTTAAAAAATTTCTGCTCCTGGTATTAATGGAAATGAAACC A cjb111_a12.seq									
1551	AAAATCAAACCTTTAAAAAATTTCTGCTCCTGGTATTAATGGAAATGAAACC A h36b_a12.seq									
TCATCAATAACA AAAAGATAAGGCAGAAAGAATGGCGATTGTCAACCATTTTA Majority										
1610 1620 1630 1640 1650										
1601	TCATCAATAACA AAAAGATAAGGCAGAAAGAATGGCGATTGTCAACCATTTTA 2603_a12.seq									
1601	TCATCAATAACA AAAAGATAAGGCAGAAAGAATGGCGATTGTCAACCATTTTA 18rs21_a12.seq									
1601	TCATCAATAACA AAAAGATAAGGCAGAAAGAATGGCGATTGTCAACCATTTTA 515_a12.seq									
1601	TCATCAATAACA AAAAGATAAGGCAGAAAGAATGGCGATTGTCAACCATTTTA cjb111_a12.seq									
1601	TCATCAATAACA AAAAGATAAGGCAGAAAGAATGGCGATTGTCAACCATTTTA h36b_a12.seq									
CGTGATTTTGTCTATAAAAAAATTCCTCCAATTTAAATAAATTGAAAGAA G Majority										
1660 1670 1680 1690 1700										
1651	CGTGATTTTGTCTATAAAAAAATTCCTCCAATTTAAATAAATTGAAAGAA G 2603_a12.seq									
1651	CGTGATTTTGTCTATAAAAAAATTCCTCCAATTTAAATAAATTGAAAGAA G 18rs21_a12.seq									
1651	CGTGATTTTGTCTATAAAAAAATTCCTCCAATTTAAATAAATTGAAAGAA G 515_a12.seq									
1651	CGTGATTTTGTCTATAAAAAAATTCCTCCAATTTAAATAAATTGAAAGAA G cjb111_a12.seq									
1651	CGTGATTTTGTCTATAAAAAAATTCCTCCAATTTAAATAAATTGAAAGAA G h36b_a12.seq									
CTCCAAAGGTAAGCGTATGTACGCGAAAAAAA -CCTTTGTCTTCTCCCATC Majority										
1710 1720 1730 1740 1750										
1701	CTCCAAAGGTAAGCGTATGTACGCGAAAAAAA -CCTTTGTCTTCTCCCATC 2603_a12.seq									
1701	CTCCAAAGGTAAGCGTATGTACGCGAAAAAAA -CCTTTGTCTTCTCCCATC 18rs21_a12.seq									
1701	CTCCAAAGGTAAGCGTATGTACGCGAAAAAAA -CCTTTGTCTTCTCCCATC 515_a12.seq									
1701	CTCCAAAGGTAAGCGTATGTACGCGAAAAAAA -CCTTTGTCTTCTCCCATC cjb111_a12.seq									
1701	CTCCAAAGGTAAGCGTATGTACGCGAAAAAAA -CCTTTGTCTTCTCCCATC h36b_a12.seq									
CAGACTTTTACTGTCGGTTGTGGAATCTCACACATCAGCTTTTCGCTCGCG Majority										
1760 1770 1780 1790 1800										
1750	CAGACTTTTACTGTCGGTTGTGGAATCTCACACATCAGCTTTTCGCTCGCG 2603_a12.seq									
1750	CAGACTTTTACTGTCGGTTGTGGAATCTCACACATCAGCTTTTCGCTCGCG 18rs21_a12.seq									
1751	CAGACTTTTACTGTCGGTTGTGGAATCTCACACATCAGCTTTTCGCTCGCG 515_a12.seq									
1750	CAGACTTTTACTGTCGGTTGTGGAATCTCACACATCAGCTTTTCGCTCGCG cjb111_a12.seq									
1750	CAGACTTTTACTGTCGGTTGTGGAATCTCACACATCAGCTTTTCGCTCGCG h36b_a12.seq									

FIGURE 19C

G A C T G A T G C T T C A C A A C T G A C A A A T A A G T T G G A A G C G A T T A C C G C C G G T C Majority									
1810 1820 1830 1840 1850									
1800	G A C T G A T G C T T C A C A A C T G A C A A A T A A G T T G G A A G C G A T T A C C G C C G G T C 2603_a12.seq								
1800	G A C T G A T G C T T C A C A A C T G A C A A A T A A G T T G G A A G C G A T T A C C G C C G G T C 18rs21_a12.seq								
1801	G A C T G A T G C T T C A C A A C T G A C A A A T A A G T T G G A A G C G A T T A C C G C C G G T C 515_a12.seq								
1800	G A C T G A T G C T T C A C A A C T G A C A A A T A A G T T G G A A G C G A T T A C C G C C G G T C cjb111_a12.seq								
1800	G A C T G A T G C T T C A C A A C T G A C A A A T A A G T T G G A A G C G A T T A C C G C C G G T C h36b_a12.seq								
G G G A A T T A C A C C C T G C C C T G A A G A C A C C T A T A G C A T A A C A A A A A A A C T T Majority									
1860 1870 1880 1890 1900									
1850	G G G A A T T A C A C C C T G C C C T G A A G A C A C C T A T A G C A T A A C A A A A A A A C T T 2603_a12.seq								
1850	G G G A A T T A C A C C C T G C C C T G A A G A C A C C T A T A G C A T A A C A A A A A A A C T T 18rs21_a12.seq								
1851	G G G A A T T A C A C C C T G C C C T G A A G A C A C C T A T A G C A T A A C A A A A A A A C T T 515_a12.seq								
1850	G G G A A T T A C A C C C T G C C C T G A A G A C A C C T A T A G C A T A A C A A A A A A A C T T cjb111_a12.seq								
1850	G G G A A T T A C A C C C T G C C C T G A A G A C A C C T A T A G C A T A A C A A A A A A A C T T h36b_a12.seq								
G C A A T T G C A A G T T T T T T A A T T A C T A A T T A G T A G T A G T G A T T A A A A A T C A T Majority									
1910 1920 1930 1940 1950									
1900	G C A A T T G C A A G T T T T T T A A T T A C T A A T T A G T A G T A G T G A T T A A A A A T C A T 2603_a12.seq								
1900	G C A A T T G C A A G T T T T T T A A T T A C T A A T T A G T A G T A G T G A T T A A A A A T C A T 18rs21_a12.seq								
1901	G C A A T T G C A A G T T T T T T A A T T A C T A A T T A G T A G T A G T G A T T A A A A A T C A T 515_a12.seq								
1900	G C A A T T G C A A G T T T T T T A A T T A C T A A T T A G T A G T A G T G A T T A A A A A T C A T cjb111_a12.seq								
1900	G C A A T T G C A A G T T T T T T A A T T A C T A A T T A G T A G T A G T G A T T A A A A A T C A T h36b_a12.seq								
A T T A A T A C C A A A T T A C T A T A C T G T A T C G T T T C T T T C A G A T T T G C T A T T T T Majority									
1960 1970 1980 1990 2000									
1950	A T T A A T A C C A A A T T A C T A T A C T G T A T C G T T T C T T T C A G A T T T G C T A T T T T 2603_a12.seq								
1950	A T T A A T A C C A A A T T A C T A T A C T G T A T C G T T T C T T T C A G A T T T G C T A T T T T 18rs21_a12.seq								
1951	A T T A A T A C C A A A T T A C T A T A C T G T A T C G T T T C T T T C A G A T T T G C T A T T T T 515_a12.seq								
1950	A T T A A T A C C A A A T T A C T A T A C T G T A T C G T T T C T T T C A G A T T T G C T A T T T T cjb111_a12.seq								
1950	A T T A A T A C C A A A T T A C T A T A C T G T A T C G T T T C T T T C A G A T T T G C T A T T T T h36b_a12.seq								
T A G T T T T T C T T A A A A A G A T A A A C A A A A T T C C C A A A A T A A T A C A A C C A A G A Majority									
2010 2020 2030 2040 2050									
2000	T A G T T T T T C T T A A A A A G A T A A A C A A A A T T C C C A A A A T A A T A C A A C C A A G A 2603_a12.seq								
2000	T A G T T T T T C T T A A A A A G A T A A A C A A A A T T C C C A A A A T A A T A C A A C C A A G A 18rs21_a12.seq								
2001	T A G T T T T T C T T A A A A A G A T A A A C A A A A T T C C C A A A A T A A T A C A A C C A A G A 515_a12.seq								
2000	T A G T T T T T C T T A A A A A G A T A A A C A A A A T T C C C A A A A T A A T A C A A C C A A G A cjb111_a12.seq								
2000	T A G T T T T T C T T A A A A A G A T A A A C A A A A T T C C C A A A A T A A T A C A A C C A A G A h36b_a12.seq								
A T T G T C A G T C C T C C A C C A A T A A T C A T T C C T G T T T T A G G A A G A A A T G A T T C Majority									
2060 2070 2080 2090 2100									
2050	A T T G T C A G T C C T C C A C C A A T A A T C A T T C C T G T T T T A G G A A G A A A T G A T T C 2603_a12.seq								
2050	A T T G T C A G T C C T C C A C C A A T A A T C A T T C C T G T T T T A G G A A G A A A T G A T T C 18rs21_a12.seq								
2051	A T T G T C A G T C C T C C A C C A A T A A T C A T T C C T G T T T T A G G A A G A A A T G A T T C 515_a12.seq								
2050	A T T G T C A G T C C T C C A C C A A T A A T C A T T C C T G T T T T A G G A A G A A A T G A T T C cjb111_a12.seq								
2050	A T T G T C A G T C C T C C A C C A A T A A T C A T T C C T G T T T T A G G A A G A A A T G A T T C h36b_a12.seq								
T G G A A A A A G C G G T T G T G A T G C T T T A G G A T T T G T T C G T G G A G G A G T T T C T T Majority									
2110 2120 2130 2140 2150									
2100	T G G A A A A A G C G G T T G T G A T G C T T T A G G A T T T G T T C G T G G A G G A G T T T C T T 2603_a12.seq								
2100	T G G A A A A A G C G G T T G T G A T G C T T T A G G A T T T G T T C G T G G A G G A G T T T C T T 18rs21_a12.seq								
2101	T G G A A A A A G C G G T T G T G A T G C T T T A G G A T T T G T T C G T G G A G G A G T T T C T T 515_a12.seq								
2100	T G G A A A A A G C G G T T G T G A T G C T T T A G G A T T T G T T C G T G G A G G A G T T T C T T cjb111_a12.seq								
2100	T G G A A A A A G C G G T T G T G A T G C T T T A G G A T T T G T T C G T G G A G G A G T T T C T T h36b_a12.seq								
T T T C G T T T T C T A C C T C T A C T T C C T G T G T T T T A T T A G C A A C T A C A G C A A C T Majority									
2160 2170 2180 2190 2200									
2150	T T T C G T T T T C T A C C T C T A C T T C C T G T G T T T T A T T A G C A A C T A C A G C A A C T 2603_a12.seq								
2150	T T T C G T T T T C T A C C T C T A C T T C C T G T G T T T T A T T A G C A A C T A C A G C A A C T 18rs21_a12.seq								
2151	T T T C G T T T T C T A C C T C T A C T T C C T G T G T T T T A T T A G C A A C T A C A G C A A C T 515_a12.seq								
2150	T T T C G T T T T C T A C C T C T A C T T C C T G T G T T T T A T T A G C A A C T A C A G C A A C T cjb111_a12.seq								
2150	T T T C G T T T T C T A C C T C T A C T T C C T G T G T T T T A T T A G C A A C T A C A G C A A C T h36b_a12.seq								
A C A G C A T C C T T C A T A G A T A T A C G G T A A C C A G T T A G T G C T T T T G C T T C T C G Majority									
2210 2220 2230 2240 2250									
2200	A C A G C A T C C T T C A T A G A T A T A C G G T A A C C A G T T A G T G C T T T T G C T T C T C G 2603_a12.seq								
2200	A C A G C A T C C T T C A T A G A T A T A C G G T A A C C A G T T A G T G C T T T T G C T T C T C G 18rs21_a12.seq								
2201	A C A G C A T C C T T C A T A G A T A T A C G G T A A C C A G T T A G T G C T T T T G C T T C T C G 515_a12.seq								
2200	A C A G C A T C C T T C A T A G A T A T A C G G T A A C C A G T T A G T G C T T T T G C T T C T C G cjb111_a12.seq								
2200	A C A G C A T C C T T C A T A G A T A T A C G G T A A C C A G T T A G T G C T T T T G C T T C T C G h36b_a12.seq								

FIGURE 19D

61/487

	AAAAAATATACTTACCAAGGTAATAAACCTTCAACCTCAATTTCTCCCTTAT	Majority
	2260 2270 2280 2290 2300	
2250	AAAAAATATACTTACCAAGGTAATAAACCTTCAACCTCAATTTCTCCCTTAT	2603_a12.seq
2250	AAAAAATATACTTACCAAGGTAATAAACCTTCAACCTCAATTTCTCCCTTAT	18rs21_a12.seq
2251	AAAAAATATACTTACCAAGGTAATAAACCTTCAACCTCAATTTCTCCCTTAT	515_a12.seq
2250	AAAAAATATACTTACCAAGGTAATAAACCTTCAACCTCAATTTCTCCCTTAT	cjb111_a12.seq
2250	AAAAAATATACTTACCAAGGTAATAAACCTTCAACCTCAATTTCTCCCTTAT	h36b_a12.seq
	CATCAGTTACTAATGAAGTAATCCCATCTTGATCGGTCGTAAATCGTCCA	Majority
	2310 2320 2330 2340 2350	
2300	CATCAGTTACTAATGAAGTAATCCCATCTTGATCGGTCGTAAATCGTCCA	2603_a12.seq
2300	CATCAGTTACTAATGAAGTAATCCCATCTTGATCGGTCGTAAATCGTCCA	18rs21_a12.seq
2301	CATCAGTTACTAATGAAGTAATCCCATCTTGATCGGTCGTAAATCGTCCA	515_a12.seq
2300	CATCAGTTACTAATGAAGTAATCCCATCTTGATCGGTCGTAAATCGTCCA	cjb111_a12.seq
2300	CATCAGTTACTAATGAAGTAATCCCATCTTGATCGGTCGTAAATCGTCCA	h36b_a12.seq
	TTTTTAAAGCGAAGCTGGCTGATTCTCGTTATCGTATAATACAAATATTAC	Majority
	2360 2370 2380 2390 2400	
2350	TTTTTAAAGCGAAGCTGGCTGATTCTCGTTATCGTATAATACAAATATTAC	2603_a12.seq
2350	TTTTTAAAGCGAAGCTGGCTGATTCTCGTTATCGTATAATACAAATATTAC	18rs21_a12.seq
2351	TTTTTAAAGCGAAGCTGGCTGATTCTCGTTATCGTATAATACAAATATTAC	515_a12.seq
2350	TTTTTAAAGCGAAGCTGGCTGATTCTCGTTATCGTATAATACAAATATTAC	cjb111_a12.seq
2350	TTTTTAAAGCGAAGCTGGCTGATTCTCGTTATCGTATAATACAAATATTAC	h36b_a12.seq
	TCCGGATAGCCCTTTTCTTTATCTTTCTTCTTTTGTATATTTAATAAGTT	Majority
	2410 2420 2430 2440 2450	
2400	TCCGGATAGCCCTTTTCTTTATCTTTCTTCTTTTGTATATTTAATAAGTT	2603_a12.seq
2400	TCCGGATAGCCCTTTTCTTTATCTTTCTTCTTTTGTATATTTAATAAGTT	18rs21_a12.seq
2401	TCCGGATAGCCCTTTTCTTTATCTTTCTTCTTTTGTATATTTAATAAGTT	515_a12.seq
2400	TCCGGATAGCCCTTTTCTTTATCTTTCTTCTTTTGTATATTTAATAAGTT	cjb111_a12.seq
2400	TCCGGATAGCCCTTTTCTTTATCTTTCTTCTTTTGTATATTTAATAAGTT	h36b_a12.seq
	TAAATCGGCCCTGTTTCAACTTTTCGCTTAGGATTTATCTGTAATTGATTT	Majority
	2460 2470 2480 2490 2500	
2450	TAAATCGGCCCTGTTTCAACTTTTCGCTTAGGATTTATCTGTAATTGATTT	2603_a12.seq
2450	TAAATCGGCCCTGTTTCAACTTTTCGCTTAGGATTTATCTGTAATTGATTT	18rs21_a12.seq
2451	TAAATCGGCCCTGTTTCAACTTTTCGCTTAGGATTTATCTGTAATTGATTT	515_a12.seq
2450	TAAATCGGCCCTGTTTCAACTTTTCGCTTAGGATTTATCTGTAATTGATTT	cjb111_a12.seq
2450	TAAATCGGCCCTGTTTCAACTTTTCGCTTAGGATTTATCTGTAATTGATTT	h36b_a12.seq
	GATAACTTATCATCTGGTAATTCAATATAAAAGGTACTATTGTTGAAAC	Majority
	2510 2520 2530 2540 2550	
2500	GATAACTTATCATCTGGTAATTCAATATAAAAGGTACTATTGTTGAAAC	2603_a12.seq
2500	GATAACTTATCATCTGGTAATTCAATATAAAAGGTACTATTGTTGAAAC	18rs21_a12.seq
2501	GATAACTTATCATCTGGTAATTCAATATAAAAGGTACTATTGTTGAAAC	515_a12.seq
2500	GATAACTTATCATCTGGTAATTCAATATAAAAGGTACTATTGTTGAAAC	cjb111_a12.seq
2500	GATAACTTATCATCTGGTAATTCAATATAAAAGGTACTATTGTTGAAAC	h36b_a12.seq
	GCTTTTGATCAGCTTTTATAAGCACGACCAAAGTACGAACCATTTGGGAGTG	Majority
	2560 2570 2580 2590 2600	
2550	GCTTTTGATCAGCTTTTATAAGCACGACCAAAGTACGAACCATTTGGGAGTG	2603_a12.seq
2550	GCTTTTGATCAGCTTTTATAAGCACGACCAAAGTACGAACCATTTGGGAGTG	18rs21_a12.seq
2551	GCTTTTGATCAGCTTTTATAAGCACGACCAAAGTACGAACCATTTGGGAGTG	515_a12.seq
2550	GCTTTTGATCAGCTTTTATAAGCACGACCAAAGTACGAACCATTTGGGAGTG	cjb111_a12.seq
2550	GCTTTTGATCAGCTTTTATAAGCACGACCAAAGTACGAACCATTTGGGAGTG	h36b_a12.seq
	CTATCTTTGTCTGACCAATTAGTATCAGTAGGAGAAAGTCAAGATACTCTTA	Majority
	2610 2620 2630 2640 2650	
2600	CTATCTTTGTCTGACCAATTAGTATCAGTAGGAGAAAGTCAAGATACTCTTA	2603_a12.seq
2600	CTATCTTTGTCTGACCAATTAGTATCAGTAGGAGAAAGTCAAGATACTCTTA	18rs21_a12.seq
2601	CTATCTTTGTCTGACCAATTAGTATCAGTAGGAGAAAGTCAAGATACTCTTA	515_a12.seq
2600	CTATCTTTGTCTGACCAATTAGTATCAGTAGGAGAAAGTCAAGATACTCTTA	cjb111_a12.seq
2600	CTATCTTTGTCTGACCAATTAGTATCAGTAGGAGAAAGTCAAGATACTCTTA	h36b_a12.seq
	TACTTCTGGTTCAATTTCGCTATCTGTCAATTTGGCTCAATAAATCAACTTT	Majority
	2660 2670 2680 2690 2700	
2650	TACTTCTGGTTCAATTTCGCTATCTGTCAATTTGGCTCAATAAATCAACTTT	2603_a12.seq
2650	TACTTCTGGTTCAATTTCGCTATCTGTCAATTTGGCTCAATAAATCAACTTT	18rs21_a12.seq
2651	TACTTCTGGTTCAATTTCGCTATCTGTCAATTTGGCTCAATAAATCAACTTT	515_a12.seq
2650	TACTTCTGGTTCAATTTCGCTATCTGTCAATTTGGCTCAATAAATCAACTTT	cjb111_a12.seq
2650	TACTTCTGGTTCAATTTCGCTATCTGTCAATTTGGCTCAATAAATCAACTTT	h36b_a12.seq

FIGURE 19E

62/487

	T A A G T T G T C A G T C A C A G T C C A T A A A C G A T A A G A A A T C C C C T C C T C T G T A G Majority									
	2710		2720		2730		2740		2750	
2700	T A A G T T G T C A G T C A C A G T C C A T A A A C G A T A A G A A A T C C C C T C C T C T G T A G 2603_a12.seq									
2700	T A A G T T G T C A G T C A C A G T C C A T A A A C G A T A A G A A A T C C C C T C C T C T G T A G 18rs21_a12.seq									
2701	T A A G T T G T C A G T C A C A G T C C A T A A A C G A T A A G A A A T C C C C T C C T C T G T A G 515_a12.seq									
2700	T A A G T T G T C A G T C A C A G T C C A T A A A C G A T A A G A A A T C C C C T C C T C T G T A G cjb111_a12.seq									
2700	T A A G T T G T C A G T C A C A G T C C A T A A A C G A T A A G A A A T C C C C T C C T C T G T A G h36b_a12.seq									
	T A T T T G G C T G A A G T C C T A T C T G T G T G A T T G T T A G T T G A T T A G G G G T A T C A Majority									
	2760		2770		2780		2790		2800	
2750	T A T T T G G C T G A A G T C C T A T C T G T G T G A T T G T T A G T T G A T T A G G G G T A T C A 2603_a12.seq									
2750	T A T T T G G C T G A A G T C C T A T C T G T G T G A T T G T T A G T T G A T T A G G G G T A T C A 18rs21_a12.seq									
2751	T A T T T G G C T G A A G T C C T A T C T G T G T G A T T G T T A G T T G A T T A G G G G T A T C A 515_a12.seq									
2750	T A T T T G G C T G A A G T C C T A T C T G T G T G A T T G T T A G T T G A T T A G G G G T A T C A cjb111_a12.seq									
2750	T A T T T G G C T G A A G T C C T A T C T G T G T G A T T G T T A G T T G A T T A G G G G T A T C A h36b_a12.seq									
	G C A T T T T A C A C T G G C T A C C G A A A A A A A C G C T A A T T G T A C C A A T C C T A A A A A Majority									
	2810		2820		2830		2840		2850	
2800	G C A T T T T A C A C T G G C T A C C G A A A A A A A C G C T A A T T G T A C C A A T C C T A A A A A 2603_a12.seq									
2800	G C A T T T T A C A C T G G C T A C C G A A A A A A A C G C T A A T T G T A C C A A T C C T A A A A A 18rs21_a12.seq									
2801	G C A T T T T A C A C T G G C T A C C G A A A A A A A C G C T A A T T G T A C C A A T C C T A A A A A 515_a12.seq									
2800	G C A T T T T A C A C T G G C T A C C G A A A A A A A C G C T A A T T G T A C C A A T C C T A A A A A cjb111_a12.seq									
2800	G C A T T T T A C A C T G G C T A C C G A A A A A A A C G C T A A T T G T A C C A A T C C T A A A A A h36b_a12.seq									
	G C A A C A T A G T A G A A G T C C T A A A C T T T T T C T A A T C T T T T T C A T T T T T G A T T Majority									
	2860		2870		2880		2890		2900	
2850	G C A A C A T A G T A G A A G T C C T A A A C T T T T T C T A A T C T T T T T C A T T T T T G A T T 2603_a12.seq									
2850	G C A A C A T A G T A G A A G T C C T A A A C T T T T T C T A A T C T T T T T C A T T T T T G A T T 18rs21_a12.seq									
2851	G C A A C A T A G T A G A A G T C C T A A A C T T T T T C T A A T C T T T T T C A T T T T T G A T T 515_a12.seq									
2850	G C A A C A T A G T A G A A G T C C T A A A C T T T T T C T A A T C T T T T T C A T T T T T G A T T cjb111_a12.seq									
2850	G C A A C A T A G T A G A A G T C C T A A A C T T T T T C T A A T C T T T T T C A T T T T T G A T T h36b_a12.seq									
	T C C C T T T C T C T T T C T C T T T T A A A T T T T C G T T T T T A A A T A T A A T A G T A A A G Majority									
	2910		2920		2930		2940		2950	
2900	T C C C T T T C T C T T T C T C T T T T A A A T T T T C G T T T T A A A T A T A A T A G T A A A G 2603_a12.seq									
2900	T C C C T T T C T C T T T C T C T T T T A A A T T T T C G T T T T A A A T A T A A T A G T A A A G 18rs21_a12.seq									
2901	T C C C T T T C T C T T T C T C T T T T A A A T T T T C G T T T T A A A T A T A A T A G T A A A G 515_a12.seq									
2900	T C C C T T T C T C T T T C T C T T T T A A A T T T T C G T T T T A A A T A T A A T A G T A A A G cjb111_a12.seq									
2900	T C C C T T T C T C T T T C T C T T T T A A A T T T T C G T T T T A A A T A T A A T A G T A A A G h36b_a12.seq									
	C G A C T A A T A T A A G A A T A A C T A G G A T T G A T A A G A G G A A A T A A A G T T T A T A G Majority									
	2960		2970		2980		2990		3000	
2950	C G A C T A A T A T A A G A A T A A C T A G G A T T G A T A A G A G G A A A T A A A G T T T A T A G 2603_a12.seq									
2950	C G A C T A A T A T A A G A A T A A C T A G G A T T G A T A A G A G G A A A T A A A G T T T A T A G 18rs21_a12.seq									
2951	C G A C T A A T A T A A G A A T A A C T A G G A T T G A T A A G A G G A A A T A A A G T T T A T A G 515_a12.seq									
2950	C G A C T A A T A T A A G A A T A A C T A G G A T T G A T A A G A G G A A A T A A A G T T T A T A G cjb111_a12.seq									
2950	C G A C T A A T A T A A G A A T A A C T A G G A T T G A T A A G A G G A A A T A A A G T T T A T A G h36b_a12.seq									
	T G T G T T T G C A A T T C T T T C A T T A A A T A G T T C T T T T C T T T T A A C A G G A G G T A C Majority									
	3010		3020		3030		3040		3050	
3000	T G T G T T T G C A A T T C T T T C A T T A A A T A G T T C T T T T C T T T T A A C A G G A G G T A C 2603_a12.seq									
3000	T G T G T T T G C A A T T C T T T C A T T A A A T A G T T C T T T T C T T T T A A C A G G A G G T A C 18rs21_a12.seq									
3001	T G T G T T T G C A A T T C T T T C A T T A A A T A G T T C T T T T C T T T T A A C A G G A G G T A C 515_a12.seq									
3000	T G T G T T T G C A A T T C T T T C A T T A A A T A G T T C T T T T C T T T T A A C A G G A G G T A C cjb111_a12.seq									
3000	T G T G T T T G C A A T T C T T T C A T T A A A T A G T T C T T T T C T T T T A A C A G G A G G T A C h36b_a12.seq									
	A T A C T T G A T T C G A T G C C C T C T A A C T A G T A A A C G A T G T G A A T T A A T C G A A T Majority									
	3060		3070		3080		3090		3100	
3050	A T A C T T G A T T C G A T G C C C T C T A A C T A G T A A A C G A T G T G A A T T A A T C G A A T 2603_a12.seq									
3050	A T A C T T G A T T C G A T G C C C T C T A A C T A G T A A A C G A T G T G A A T T A A T C G A A T 18rs21_a12.seq									
3051	A T A C T T G A T T C G A T G C C C T C T A A C T A G T A A A C G A T G T G A A T T A A T C G A A T 515_a12.seq									
3050	A T A C T T G A T T C G A T G C C C T C T A A C T A G T A A A C G A T G T G A A T T A A T C G A A T cjb111_a12.seq									
3050	A T A C T T G A T T C G A T G C C C T C T A A C T A G T A A A C G A T G T G A A T T A A T C G A A T h36b_a12.seq									
	A A G G T G T A C A T G T T A G C A A A A G T C G C A T A A T C C T T A C C T T T A A C A A C C A A T Majority									
	3110		3120		3130		3140		3150	
3100	A A G G T G T A C A T G T T A G C A A A A G T C G C A T A A T C C T T A C C T T T A A C A A C C A A T 2603_a12.seq									
3100	A A G G T G T A C A T G T T A G C A A A A G T C G C A T A A T C C T T A C C T T T A A C A A C C A A T 18rs21_a12.seq									
3101	A A G G T G T A C A T G T T A G C A A A A G T C G C A T A A T C C T T A C C T T T A A C A A C C A A T 515_a12.seq									
3100	A A G G T G T A C A T G T T A G C A A A A G T C G C A T A A T C C T T A C C T T T A A C A A C C A A T cjb111_a12.seq									
3100	A A G G T G T A C A T G T T A G C A A A A G T C G C A T A A T C C T T A C C T T T A A C A A C C A A T h36b_a12.seq									

FIGURE 19F

FIGURE 19G

		Majority									
		T G A T T A T C A A A G T T A G C T T A A T A T T A T A G T A C C A									
		3610 3620 3630 3640 3650									
3600	T G A T T A T C A A A G T T A G C T T A A T A T T A T A G T A C C A	2603_al2.seq									
3600	T G A T T A T C A A A G T T A G C T T A A T A T T A T A G T A C C A	18rs21_al2.seq									
3601	T G A T T A T C A A A G T T A G C T T A A T A T T A T A G T A C C A	515_al2.seq									
3600	T G A T T A T C A A A G T T A G C T T A A T A T T A T A G T A C C A	cjb111_al2.seq									
3600	T G A T T A T C A A A G T T A G C T T A A T A T T A T A G T A C C A	h36b_al2.seq									
		A T T T G A A A T A A A A G G A T A T G A G G T T A T C A A A A G A C C A A C T A A G A A C A A T A									
		3660 3670 3680 3690 3700									
3650	A T T T G A A A T A A A A G G A T A T G A G G T T A T C A A A A G A C C A A C T A A G A A C A A T A	2603_al2.seq									
3650	A T T T G A A A T A A A A G G A T A T G A G G T T A T C A A A A G A C C A A C T A A G A A C A A T A	18rs21_al2.seq									
3651	A T T T G A A A T A A A A G G A T A T G A G G T T A T C A A A A G A C C A A C T A A G A A C A A T A	515_al2.seq									
3650	A T T T G A A A T A A A A G G A T A T G A G G T T A T C A A A A G A C C A A C T A A G A A C A A T A	cjb111_al2.seq									
3650	A T T T G A A A T A A A A G G A T A T G A G G T T A T C A A A A G A C C A A C T A A G A A C A A T A	h36b_al2.seq									
		G T A T C A A G C C T A C A T T C A T C C A T C G A T T T A A A A C G A C C G A T T T C T T A A G G									
		3710 3720 3730 3740 3750									
3700	G T A T C A A G C C T A C A T T C A T C C A T C G A T T T A A A A C G A C C G A T T T C T T A A G G	2603_al2.seq									
3700	G T A T C A A G C C T A C A T T C A T C C A T C G A T T T A A A A C G A C C G A T T T C T T A A G G	18rs21_al2.seq									
3701	G T A T C A A G C C T A C A T T C A T C C A T C G A T T T A A A A C G A C C G A T T T C T T A A G G	515_al2.seq									
3700	G T A T C A A G C C T A C A T T C A T C C A T C G A T T T A A A A C G A C C G A T T T C T T A A G G	cjb111_al2.seq									
3700	G T A T C A A G C C T A C A T T C A T C C A T C G A T T T A A A A C G A C C G A T T T C T T A A G G	h36b_al2.seq									
		T T T T T C T G A A A T T T T C C T C C C A T T A T G A T T C A A T T C T T T T C T A A C A C T T									
		3760 3770 3780 3790 3800									
3750	T T T T T C T G A A A T T T T C C T C C C A T T A T G A T T C A A T T C T T T T C T A A C A C T T	2603_al2.seq									
3750	T T T T T C T G A A A T T T T C C T C C C A T T A T G A T T C A A T T C T T T T C T A A C A C T T	18rs21_al2.seq									
3751	T T T T T C T G A A A T T T T C C T C C C A T T A T G A T T C A A T T C T T T T C T A A C A C T T	515_al2.seq									
3750	T T T T T C T G A A A T T T T C C T C C C A T T A T G A T T C A A T T C T T T T C T A A C A C T T	cjb111_al2.seq									
3750	T T T T T C T G A A A T T T T C C T C C C A T T A T G A T T C A A T T C T T T T C T A A C A C T T	h36b_al2.seq									
		G C T A A A C G A T T T T T T T G A C G T T G A C G T T T T A T T A A C C A A A G T A A C C A A G C									
		3810 3820 3830 3840 3850									
3800	G C T A A A C G A T T T T T T T G A C G T T G A C G T T T T A T T A A C C A A A G T A A C C A A G C	2603_al2.seq									
3800	G C T A A A C G A T T T T T T T G A C G T T G A C G T T T T A T T A A C C A A A G T A A C C A A G C	18rs21_al2.seq									
3801	G C T A A A C G A T T T T T T T G A C G T T G A C G T T T T A T T A A C C A A A G T A A C C A A G C	515_al2.seq									
3800	G C T A A A C G A T T T T T T T G A C G T T G A C G T T T T A T T A A C C A A A G T A A C C A A G C	cjb111_al2.seq									
3800	G C T A A A C G A T T T T T T T G A C G T T G A C G T T T T A T T A A C C A A A G T A A C C A A G C	h36b_al2.seq									
		A A T A A T A A C T A A A G A T A T A T A G A A A A G A T A T C T A T A A A T C G T G T T T A A A T									
		3860 3870 3880 3890 3900									
3850	A A T A A T A A C T A A A G A T A T A T A G A A A A G A T A T C T A T A A A T C G T G T T T A A A T	2603_al2.seq									
3850	A A T A A T A A C T A A A G A T A T A T A G A A A A G A T A T C T A T A A A T C G T G T T T A A A T	18rs21_al2.seq									
3851	A A T A A T A A C T A A A G A T A T A T A G A A A A G A T A T C T A T A A A T C G T G T T T A A A T	515_al2.seq									
3850	A A T A A T A A C T A A A G A T A T A T A G A A A A G A T A T C T A T A A A T C G T G T T T A A A T	cjb111_al2.seq									
3850	A A T A A T A A C T A A A G A T A T A T A G A A A A G A T A T C T A T A A A T C G T G T T T A A A T	h36b_al2.seq									
		G A C C G T C T T T T A T T A A T T T T T C A T C A A T A G G A C C T T T A T A A G G G A T A C C A									
		3910 3920 3930 3940 3950									
3900	G A C C G T C T T T T A T T A A T T T T T C A T C A A T A G G A C C T T T A T A A G G G A T A C C A	2603_al2.seq									
3900	G A C C G T C T T T T A T T A A T T T T T C A T C A A T A G G A C C T T T A T A A G G G A T A C C A	18rs21_al2.seq									
3901	G A C C G T C T T T T A T T A A T T T T T C A T C A A T A G G A C C T T T A T A A G G G A T A C C A	515_al2.seq									
3900	G A C C G T C T T T T A T T A A T T T T T C A T C A A T A G G A C C T T T A T A A G G G A T A C C A	cjb111_al2.seq									
3900	G A C C G T C T T T T A T T A A T T T T T C A T C A A T A G G A C C T T T A T A A G G G A T A C C A	h36b_al2.seq									
		T G T C C C C T T A C T A A A A G T C T G T G T G T A T T G A C A T A A T C G G G G T G C A A G T									
		3960 3970 3980 3990 4000									
3950	T G T C C C C T T A C T A A A A G T C T G T G T G T A T T G A C A T A A T C G G G G T G C A A G T	2603_al2.seq									
3950	T G T C C C C T T A C T A A A A G T C T G T G T G T A T T G A C A T A A T C G G G G T G C A A G T	18rs21_al2.seq									
3951	T G T C C C C T T A C T A A A A G T C T G T G T G T A T T G A C A T A A T C G G G G T G C A A G T	515_al2.seq									
3950	T G T C C C C T T A C T A A A A G T C T G T G T G T A T T G A C A T A A T C G G G G T G C A A G T	cjb111_al2.seq									
3950	T G T C C C C T T A C T A A A A G T C T G T G T G T A T T G A C A T A A T C G G G G T G C A A G T	h36b_al2.seq									
		C A A T A A G G T T G C A T A A T C A T G T C C A G G A A C A A C C A A C A A T C T G A A A A G T									
		4010 4020 4030 4040 4050									
4000	C A A T A A G G T T G C A T A A T C A T G T C C A G G A A C A A C C A A C A A T C T G A A A A G T	2603_al2.seq									
4000	C A A T A A G G T T G C A T A A T C A T G T C C A G G A A C A A C C A A C A A T C T G A A A A G T	18rs21_al2.seq									
4001	C A A T A A G G T T G C A T A A T C A T G T C C A G G A A C A A C C A A C A A T C T G A A A A G T	515_al2.seq									
4000	C A A T A A G G T T G C A T A A T C A T G T C C A G G A A C A A C C A A C A A T C T G A A A A G T	cjb111_al2.seq									
4000	C A A T A A G G T T G C A T A A T C A T G T C C A G G A A C A A C C A A C A A T C T G A A A A G T	h36b_al2.seq									

FIGURE 19H

65/487

	TATCGGGCTGTTAAACGAGCTTTTATCTCTCCTTTTAACTTTTAAAGGTT	Majority
	4060 4070 4080 4090 4100	
4050	TATCGGGCTGTTAAACGAGCTTTTATCTCTCCTTTTAACTTTTAAAGGTT	2603_a12.seq
4050	TATCGGGCTGTTAAACGAGCTTTTATCTCTCCTTTTAACTTTTAAAGGTT	18rs21_a12.seq
4051	TATCGGGCTGTTAAACGAGCTTTTATCTCTCCTTTTAACTTTTAAAGGTT	515_a12.seq
4050	TATCGGGCTGTTAAACGAGCTTTTATCTCTCCTTTTAACTTTTAAAGGTT	cjb111_a12.seq
4050	TATCGGGCTGTTAAACGAGCTTTTATCTCTCCTTTTAACTTTTAAAGGTT	h36b_a12.seq
TTTATGTTTTGAATATAAAACCTTATCTCCTTTTAACTTTTAAAGGTT		
	4110 4120 4130 4140 4150	
4100	TTTATGTTTTGAATATAAAACCTTATCTCCTTTTAACTTTTAAAGGTT	2603_a12.seq
4100	TTTATGTTTTGAATATAAAACCTTATCTCCTTTTAACTTTTAAAGGTT	18rs21_a12.seq
4101	TTTATGTTTTGAATATAAAACCTTATCTCCTTTTAACTTTTAAAGGTT	515_a12.seq
4100	TTTATGTTTTGAATATAAAACCTTATCTCCTTTTAACTTTTAAAGGTT	cjb111_a12.seq
4100	TTTATGTTTTGAATATAAAACCTTATCTCCTTTTAACTTTTAAAGGTT	h36b_a12.seq
AGAAAAGAGTTCTTTATCTGGAATTCCTGAATGCGCTGTTATAACAGTAT		
	4160 4170 4180 4190 4200	
4150	AGAAAAGAGTTCTTTATCTGGAATTCCTGAATGCGCTGTTATAACAGTAT	2603_a12.seq
4150	AGAAAAGAGTTCTTTATCTGGAATTCCTGAATGCGCTGTTATAACAGTAT	18rs21_a12.seq
4151	AGAAAAGAGTTCTTTATCTGGAATTCCTGAATGCGCTGTTATAACAGTAT	515_a12.seq
4150	AGAAAAGAGTTCTTTATCTGGAATTCCTGAATGCGCTGTTATAACAGTAT	cjb111_a12.seq
4150	AGAAAAGAGTTCTTTATCTGGAATTCCTGAATGCGCTGTTATAACAGTAT	h36b_a12.seq
GTGTAATAATTGCTTCCAATTGGAAGAGAGGTACCTTCTAAATGCCCTGCT		
	4210 4220 4230 4240 4250	
4200	GTGTAATAATTGCTTCCAATTGGAAGAGAGGTACCTTCTAAATGCCCTGCT	2603_a12.seq
4200	GTGTAATAATTGCTTCCAATTGGAAGAGAGGTACCTTCTAAATGCCCTGCT	18rs21_a12.seq
4201	GTGTAATAATTGCTTCCAATTGGAAGAGAGGTACCTTCTAAATGCCCTGCT	515_a12.seq
4200	GTGTAATAATTGCTTCCAATTGGAAGAGAGGTACCTTCTAAATGCCCTGCT	cjb111_a12.seq
4200	GTGTAATAATTGCTTCCAATTGGAAGAGAGGTACCTTCTAAATGCCCTGCT	h36b_a12.seq
CCTTTAGATAGAACCTTCTTGACTTGAACCTGCAAAATATAGGGAGTTTTTG		
	4260 4270 4280 4290 4300	
4250	CCTTTAGATAGAACCTTCTTGACTTGAACCTGCAAAATATAGGGAGTTTTTG	2603_a12.seq
4250	CCTTTAGATAGAACCTTCTTGACTTGAACCTGCAAAATATAGGGAGTTTTTG	18rs21_a12.seq
4251	CCTTTAGATAGAACCTTCTTGACTTGAACCTGCAAAATATAGGGAGTTTTTG	515_a12.seq
4250	CCTTTAGATAGAACCTTCTTGACTTGAACCTGCAAAATATAGGGAGTTTTTG	cjb111_a12.seq
4250	CCTTTAGATAGAACCTTCTTGACTTGAACCTGCAAAATATAGGGAGTTTTTG	h36b_a12.seq
ACCTATCTTAGGAACCTGAAATTGTCGCGGATTTTTCACTTACCTCTAACA		
	4310 4320 4330 4340 4350	
4300	ACCTATCTTAGGAACCTGAAATTGTCGCGGATTTTTCACTTACCTCTAACA	2603_a12.seq
4300	ACCTATCTTAGGAACCTGAAATTGTCGCGGATTTTTCACTTACCTCTAACA	18rs21_a12.seq
4301	ACCTATCTTAGGAACCTGAAATTGTCGCGGATTTTTCACTTACCTCTAACA	515_a12.seq
4300	ACCTATCTTAGGAACCTGAAATTGTCGCGGATTTTTCACTTACCTCTAACA	cjb111_a12.seq
4300	ACCTATCTTAGGAACCTGAAATTGTCGCGGATTTTTCACTTACCTCTAACA	h36b_a12.seq
TACGGGCGTACTCTGCTACCCCTTTTGAATTTCGTTTTTCTCATAAGGA		
	4360 4370 4380 4390 4400	
4350	TACGGGCGTACTCTGCTACCCCTTTTGAATTTCGTTTTTCTCATAAGGA	2603_a12.seq
4350	TACGGGCGTACTCTGCTACCCCTTTTGAATTTCGTTTTTCTCATAAGGA	18rs21_a12.seq
4351	TACGGGCGTACTCTGCTACCCCTTTTGAATTTCGTTTTTCTCATAAGGA	515_a12.seq
4350	TACGGGCGTACTCTGCTACCCCTTTTGAATTTCGTTTTTCTCATAAGGA	cjb111_a12.seq
4350	TACGGGCGTACTCTGCTACCCCTTTTGAATTTCGTTTTTCTCATAAGGA	h36b_a12.seq
TCTTCAAGATGGACATTATTTAAAGAATCATTATAAGCTTGTGCTAGAGC		
	4410 4420 4430 4440 4450	
4400	TCTTCAAGATGGACATTATTTAAAGAATCATTATAAGCTTGTGCTAGAGC	2603_a12.seq
4400	TCTTCAAGATGGACATTATTTAAAGAATCATTATAAGCTTGTGCTAGAGC	18rs21_a12.seq
4401	TCTTCAAGATGGACATTATTTAAAGAATCATTATAAGCTTGTGCTAGAGC	515_a12.seq
4400	TCTTCAAGATGGACATTATTTAAAGAATCATTATAAGCTTGTGCTAGAGC	cjb111_a12.seq
4400	TCTTCAAGATGGACATTATTTAAAGAATCATTATAAGCTTGTGCTAGAGC	h36b_a12.seq
CATACGTCGATTGATTTCTTTCTGACTAAGTTTTTATAGCAGCTCTCTCA		
	4460 4470 4480 4490 4500	
4450	CATACGTCGATTGATTTCTTTCTGACTAAGTTTTTATAGCAGCTCTCTCA	2603_a12.seq
4450	CATACGTCGATTGATTTCTTTCTGACTAAGTTTTTATAGCAGCTCTCTCA	18rs21_a12.seq
4451	CATACGTCGATTGATTTCTTTCTGACTAAGTTTTTATAGCAGCTCTCTCA	515_a12.seq
4450	CATACGTCGATTGATTTCTTTCTGACTAAGTTTTTATAGCAGCTCTCTCA	cjb111_a12.seq
4450	CATACGTCGATTGATTTCTTTCTGACTAAGTTTTTATAGCAGCTCTCTCA	h36b_a12.seq

FIGURE 19I

66/487

AATCCGCTGCTTTGATTATTAGATTCTATCGTATAGTAAAAACGTGATACC Majority									
4510		4520		4530		4540		4550	
4500	AATCCTGCTGCTTTGATTATTAGATTCTATCGTATAGTAAAAACGTGATACC	2603_al2.seq							
4500	AATCCTGCTGCTTTGATTATTAGATTCTATCGTATAGTAAAAACGTGATACC	18rs21_al2.seq							
4501	AATCCTGCTGCTTTGATTATTAGATTCTATCGTATAGTAAAAACGTGATACC	515_al2.seq							
4500	AATCCTGCTGCTTTGATTATTAGATTCTATCGTATAGTAAAAACGTGATACC	cjb111_al2.seq							
4500	AATCCTGCTGCTTTGATTATTAGATTCTATCGTATAGTAAAAACGTGATACC	h36b_al2.seq							
ACTGGATACAATAAAATAGATAGACCTATTAGAAAAAGAATGATAAAAGG Majority									
4560		4570		4580		4590		4600	
4550	ACTGGATACAATAAAATAGATAGACCTATTAGAAAAAGAATGATAAAAGG	2603_al2.seq							
4550	ACTGGATACAATAAAATAGATAGACCTATTAGAAAAAGAATGATAAAAGG	18rs21_al2.seq							
4551	ACTGGATACAATAAAATAGATAGACCTATTAGAAAAAGAATGATAAAAGG	515_al2.seq							
4550	ACTGGATACAATAAAATAGATAGACCTATTAGAAAAAGAATGATAAAAGG	cjb111_al2.seq							
4550	ACTGGATACAATAAAATAGATAGACCTATTAGAAAAAGAATGATAAAAGG	h36b_al2.seq							
AAGATTTGACTTCTTTCTTTTTT - - TGTTTTTTTTGATGATTTTTTTTACTCT Majority									
4610		4620		4630		4640		4650	
4600	AAGATTTGACTTCTTTCTTTTTT - - TGTTTTTTTTGATGATTTTTTTTACTCT	2603_al2.seq							
4600	AAGATTTGACTTCTTTCTTTTTT - - TGTTTTTTTTGATGATTTTTTTTACTCT	18rs21_al2.seq							
4601	AAGATTTGACTTCTTTCTTTTTT - - TGTTTTTTTTGATGATTTTTTTTACTCT	515_al2.seq							
4600	AAGATTTGACTTCTTTCTTTTTT - - TGTTTTTTTTGATGATTTTTTTTACTCT	cjb111_al2.seq							
4600	AAGATTTGACTTCTTTCTTTTTT - - TGTTTTTTTTGATGATTTTTTTTACTCT	h36b_al2.seq							
TCACGTCATCTCCTAAATAATGGCTCTTGCTTATGATCTAAGAGTACTTC Majority									
4660		4670		4680		4690		4700	
4650	TCACGTCATCTCCTAAATAATGGCTCTTGCTTATGATCTAAGAGTACTTC	2603_al2.seq							
4650	TCACGTCATCTCCTAAATAATGGCTCTTGCTTATGATCTAAGAGTACTTC	18rs21_al2.seq							
4648	TCACGTCATCTCCTAAATAATGGCTCTTGCTTATGATCTAAGAGTACTTC	515_al2.seq							
4647	TCACGTCATCTCCTAAATAATGGCTCTTGCTTATGATCTAAGAGTACTTC	cjb111_al2.seq							
4647	TCACGTCATCTCCTAAATAATGGCTCTTGCTTATGATCTAAGAGTACTTC	h36b_al2.seq							
TACTGAAATACCCCTTAGATCATAAGCACAGCTTTAACTGTGCTTATACAT Majority									
4710		4720		4730		4740		4750	
4700	TACTGAAATACCCCTTAGATCATAAGCACAGCTTTAACTGTGCTTATACAT	2603_al2.seq							
4700	TACTGAAATACCCCTTAGATCATAAGCACAGCTTTAACTGTGCTTATACAT	18rs21_al2.seq							
4698	TACTGAAATACCCCTTAGATCATAAGCACAGCTTTAACTGTGCTTATACAT	515_al2.seq							
4697	TACTGAAATACCCCTTAGATCATAAGCACAGCTTTAACTGTGCTTATACAT	cjb111_al2.seq							
4697	TACTGAAATACCCCTTAGATCATAAGCACAGCTTTAACTGTGCTTATACAT	h36b_al2.seq							
CATCAAAAGACTAGCCTTAAAGCTTCTCTGATTGACGCTTTTTCATGATAA Majority									
4760		4770		4780		4790		4800	
4750	CATCAAAAGACTAGCCTTAAAGCTTCTCTGATTGACGCTTTTTCATGATAA	2603_al2.seq							
4750	CATCAAAAGACTAGCCTTAAAGCTTCTCTGATTGACGCTTTTTCATGATAA	18rs21_al2.seq							
4748	CATCAAAAGACTAGCCTTAAAGCTTCTCTGATTGACGCTTTTTCATGATAA	515_al2.seq							
4747	CATCAAAAGACTAGCCTTAAAGCTTCTCTGATTGACGCTTTTTCATGATAA	cjb111_al2.seq							
4747	CATCAAAAGACTAGCCTTAAAGCTTCTCTGATTGACGCTTTTTCATGATAA	h36b_al2.seq							
CTACTGCTCCAAAGCATAATGCTTAAACCAATAATTGTGAAAAGAAATTGTA Majority									
4810		4820		4830		4840		4850	
4800	CTACTGCTCCAAAGCATAATGCTTAAACCAATAATTGTGAAAAGAAATTGTA	2603_al2.seq							
4800	CTACTGCTCCAAAGCATAATGCTTAAACCAATAATTGTGAAAAGAAATTGTA	18rs21_al2.seq							
4798	CTACTGCTCCAAAGCATAATGCTTAAACCAATAATTGTGAAAAGAAATTGTA	515_al2.seq							
4797	CTACTGCTCCAAAGCATAATGCTTAAACCAATAATTGTGAAAAGAAATTGTA	cjb111_al2.seq							
4797	CTACTGCTCCAAAGCATAATGCTTAAACCAATAATTGTGAAAAGAAATTGTA	h36b_al2.seq							
CCAATACCACTGTTTGTGGGATTGTTACCTTTTTATTTTCTACTCGTTG Majority									
4860		4870		4880		4890		4900	
4850	CCAATACCACTGTTTGTGGGATTGTTACCTTTTTATTTTCTACTCGTTG	2603_al2.seq							
4850	CCAATACCACTGTTTGTGGGATTGTTACCTTTTTATTTTCTACTCGTTG	18rs21_al2.seq							
4848	CCAATACCACTGTTTGTGGGATTGTTACCTTTTTATTTTCTACTCGTTG	515_al2.seq							
4847	CCAATACCACTGTTTGTGGGATTGTTACCTTTTTATTTTCTACTCGTTG	cjb111_al2.seq							
4847	CCAATACCACTGTTTGTGGGATTGTTACCTTTTTATTTTCTACTCGTTG	h36b_al2.seq							
CGCATCTTTTTTTTTTGTGCTGCTAGCAGCGTAGTCAATGTTACCTG - - - AAC Majority									
4910		4920		4930		4940		4950	
4900	CGCATCTTTTTTTTTTGTGCTGCTAGCAGCGTAGTCAATGTTACCTG - - - AAC	2603_al2.seq							
4900	CGCATCTTTTTTTTTTGTGCTGCTAGCAGCGTAGTCAATGTTACCTG - - - AAC	18rs21_al2.seq							
4898	CGCATCTTTTTTTTTTGTGCTGCTAGCAGCGTAGTCAATGTTACCTG - - - AAC	515_al2.seq							
4897	CGCATCTTTTTTTTTTGTGCTGCTAGCAGCGTAGTCAATGTTACCTG - - - AAC	cjb111_al2.seq							
4897	CGCATCTTTTTTTTTTGTGCTGCTAGCAGCGTAGTCAATGTTACCTG - - - AAC	h36b_al2.seq							

FIGURE 19J

67/487

C T T T T C T C T T T T G A T T T A A G T T T C A A A C T T A A C A T C A C C T G C C A A T Majority									
4960		4970		4980		4990		5000	
4944	C T G T T A T G T A T G A C C T T T G A T T A A C T A C A A A C T T A A T A T T A C C T G C C A A C	2603_a12.seq							
4944	C T G T T A T G T A T G A C C T T T G A T T A A C T A C A A A C T T A A T A T T A C C T G C C A A C	18rs21_a12.seq							
4948	C T T T A C T G T A T G A A G T A G C A T T A A A C G A A A C A T C A C C T G A T A A T	515_a12.seq							
4947	C T T T G C T A T A T G A T G T T G C A G T T A C T T C A A A G T T A C A T C A C C T G A C A A T	cjb111_a12.seq							
4944	C G T T T G C T T T T G A G C T T T T T C A A C T T T G A A A T T C A A C A T C A C C T G C T A A T	h36b_a12.seq							
T T A G C A T A A C C T G C T G G A G C T T T G T T T C T T C A A G G T T G T A A G T A C C T T C Majority									
5010		5020		5030		5040		5050	
4994	T T A G C A A A T C C T G C T G G A G C A A G T G T T T C T T C A A G G T T G T A A G T A C C G T C	2603_a12.seq							
4994	T T A G C A A A T C C T G C T G G A G C A A G T G T T T C T T C A A G G T T G T A A G T A C C G T C	18rs21_a12.seq							
4998	T T A G C A T A A C C A G T T G G T G C T T G T G T T T C T T C A A A G A G T A T T G A C C T T C	515_a12.seq							
4997	G T T G C A T A A C C T G C T G G T G C T T G A G T T T C T T C A A G G C A T A A G T G C C T T T	cjb111_a12.seq							
4994	T T A G C G T A A C C A G C T G G A G C T T T G T T T C T T C A A G T T T A T A A A F C A C C A G T	h36b_a12.seq							
T G C A A G A C C T G T A A C T T C A A A T T G A C C T T G A T C G T T T G A A G T C A A T T T A A Majority									
5060		5070		5080		5090		5100	
5044	T G C A A G A C C T G T A A C T T C A A A T T G A C C T T G A T C G T T T G A A G T G T A G G T A A	2603_a12.seq							
5044	T G C A A G A C C T G T A A C T T C A A A T T G A C C T T G A T C G T T T G A A G T G T A G G T A A	18rs21_a12.seq							
5048	A G T C A A A G C C A G T A A T T C A A A T T G A C C T T A T C G T T A G A A A T C A A T T T A A	515_a12.seq							
5047	A T C C A A A C C A G T A A T T T C A A A T T G A C C A C C G C G T T A G A G A T C A A T T T A A	cjb111_a12.seq							
5044	T G C A A G A C C G C T A A C T T C A A A T T G A C C G T T G A G C G T T T G A A G T C A T T T T A A	h36b_a12.seq							
C A A C T T T A G C A G C - T T T T T A T C T G T T A C C C A C T C A T A A G C T G T A C G A G C T Majority									
5110		5120		5130		5140		5150	
5094	T G G C T C T A G C - - - C T T A T C T G T T A T C C A C T C A T A A G C T G T A C G A G C C	2603_a12.seq							
5094	T G G C T C T A G C - - - C T T A T C T G T T A T C C A C T C A T A A G C T G T A C G A G C C	18rs21_a12.seq							
5098	C A A C A T T T C T A G C A T T T T T A T C T G T A A C C C A T C G T A T G A G T A G T A G C T	515_a12.seq							
5097	C A A C A T T A T C A G C C T T T T T A T C T G C A A C C C A T T C A T A T G A G T A G T A G C T	cjb111_a12.seq							
5094	C A A C G T T A G C A C T T T T T A T T A G T T A C C C A C T C G T A A G C T G T A C G A G C T	h36b_a12.seq							
T C A A T G A A G G C T G C A T T G T A A G C T T C T T G T T T A G T T T T G A T A G T T G C T T T Majority									
5160		5170		5180		5190		5200	
5138	T C A A T G A A G G C T G C A T C G T A A T C T G C T T G T T A G T T T T G A T A A G T T C T T T	2603_a12.seq							
5138	T C A A T G A A G G C T G C A T C G T A A T C T G C T T G T T A G T T T T G A T A A G T T C T T T	18rs21_a12.seq							
5148	T T A A C A A A G G C A T C A T T G T A A G C T T T T T G T T T T C A G T A A A G G T A G C C A A	515_a12.seq							
5147	T T A A C A A A A G C G T C A T T G T A A G C T T T T T G T T T T C A G T A A A G G T A G C C A A	cjb111_a12.seq							
5144	A C G A T G A A G G C T G C A T T G T A A G C T T C T T G A G C A G T T T T G A T T T C G C T T T	h36b_a12.seq							
T G C T G T T T T A C C T T T T T G A C C T T T T T C T T C T G C A G A C A A C T T G T T A T Majority									
5210		5220		5230		5240		5250	
5188	T G C A G T A A T T C C T T T T T A C C T T T T T G C T C T G T G C A G A C A A C T T G T T A T	2603_a12.seq							
5188	T G C A G T A A T T C C T T T T T A C C T T T T T G C T C T G T G C A G A C A A C T T G T T A T	18rs21_a12.seq							
5198	T G C T G A T T T A C C A T T T T G A C C T T T T G T T T T T C T T A G T C A A A T A T T G T	515_a12.seq							
5197	T G C T G T T T T A C C T T T T T G C C T T G T T G T T T T C T T A G T C A A A T G G T T A T	cjb111_a12.seq							
5194	A G C T G T T T T A C C T T T A G T A C C T T T T T G A T C G T C T G C T G A A A G T T T G T T G T	h36b_a12.seq							
A A G C T G C G A T A G C T T C A T C T A A A G C T A T T T T A G T A G T A G C T A A A G C T G T T Majority									
5260		5270		5280		5290		5300	
5238	A A G C A G C G A T A G C T T C A T C T A A A G C T A T T T T C T A G C A G C T A A A G - - T T	2603_a12.seq							
5238	A A G C A G C G A T A G C T T C A T C T A A A G C T A T T T T C T A G C A G C T A A A G - - T T	18rs21_a12.seq							
5248	A A G C T T T A A A G C A G C A T C C A A T G C T G A T T T A G T T G A A T C T A C A G C A G C T	515_a12.seq							
5247	A A G C T T T A A A G C T T C A T C C A A T G C T A G T T T A G C A C T T T T A G A G C T G C T G	cjb111_a12.seq							
5244	A A G C T G C G A T T T T A G C G T C A A A G A G C A G T T T T A G C A T T T G T G T A A G C T G T T	h36b_a12.seq							
T T T T G A G C T G C T T T T G C T T C A T C T G C T T T A A G T G C A A G G T A T T T A C C T G C Majority									
5310		5320		5330		5340		5350	
5285	T T T T G A C C T - - T C T G A T T G A T C T G C T T T A A G A G C A A G G T A T T T A C C T G C	2603_a12.seq							
5285	T T T T G A C C T - - T C T G A T T G A T C T G C T T T A A G A G C A A G G T A T T T A C C T G C	18rs21_a12.seq							
5298	T T T T C T G C A C T T T T G C A A C A C T G A T T T A G G T G C C A A G T A T T T G C C A T C	515_a12.seq							
5297	T T T G C T T C A G C A G T T G C T G C A C C T G C T T T A G G T G C C A A G T A T T T G C C T C	cjb111_a12.seq							
5294	G T T T G A G C T G A T A T T G T G C A G A T G A T T T T A A T G C A A G G T A T T T A C C A G C	h36b_a12.seq							
T G A G T T T T T A A C A A C G A A T T G T G C A C C T C C C A A G C G T T C A G T T T C A G G T T Majority									
5360		5370		5380		5390		5400	
5332	T G A G T T T T T A C A A C G A A T T G T G C A C C A G C C A A A C G G T C A C G T T - G T T	2603_a12.seq							
5332	T G A G T T T T T A C A A C G A A T T G T G C A C C A G C C A A A C G G T C A C G T T - G T T	18rs21_a12.seq							
5348	T - - T T C T T A A C A A G G A A G G T A G C T C C T G C C A A G C G T T C - T T T C A A T T T	515_a12.seq							
5347	T - - T T T T T A A C A A G G A A G G T A G C T C C T G C C A A G C G T T C A G T G T A G C T T	cjb111_a12.seq							
5344	T G A A T T T T T A A C A A C G A A T T G T G C A C C T T C A A A C G G T T C T G T T T C A G T C G	h36b_a12.seq							

FIGURE 19K

68/487

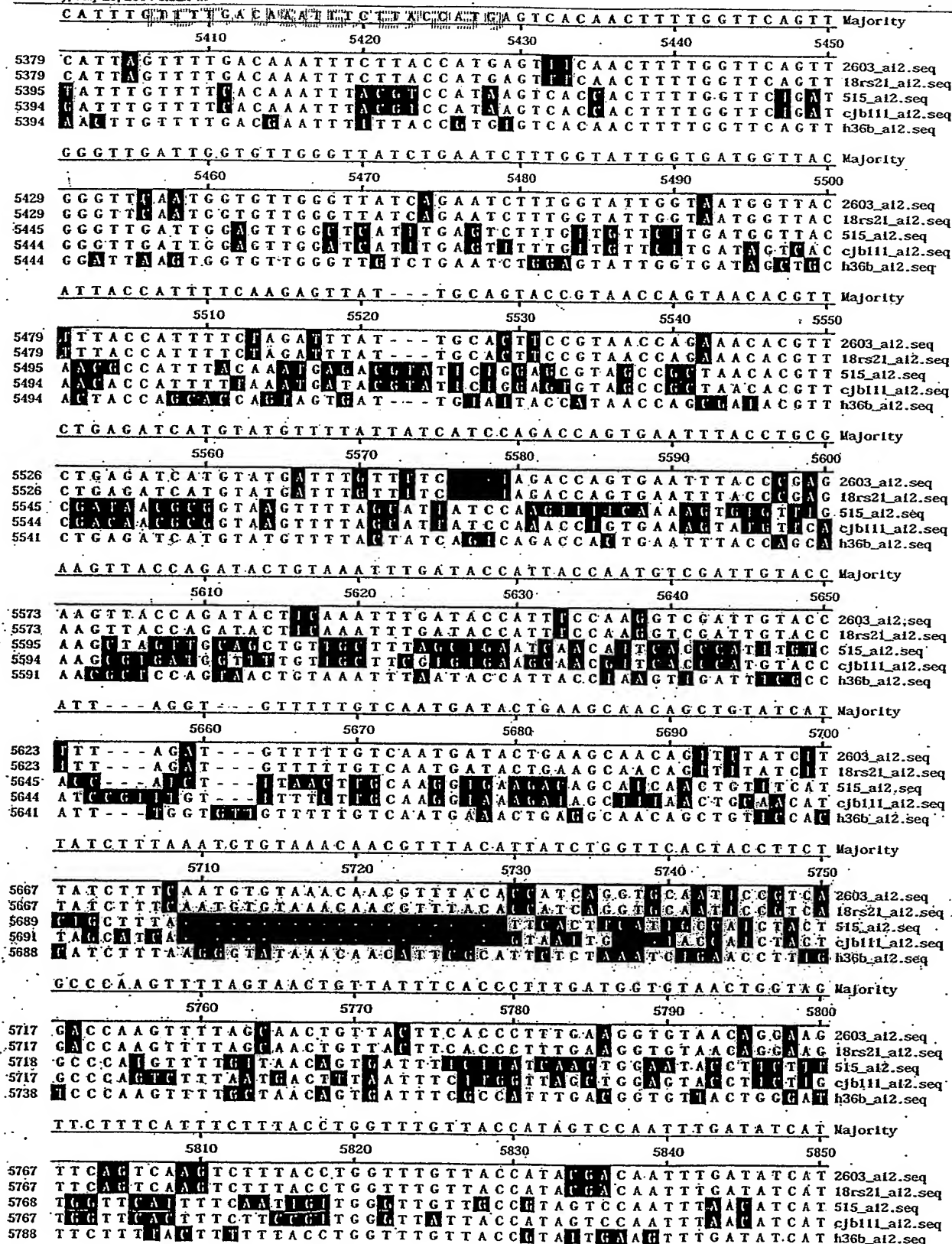


FIGURE 19L

69/487

T G C T T T C T G C A T T T T C A A C C A A A G C T T G C A C C G T T A A C A G T A G C T C T A T A A Majority									
5860		5870		5880		5890		5900	
5817	T G C A T T C T G C A T T A T C A A T A A T T G C T T G A C C A T T A A C A G T A G C A C T A T A A	2603_a12.seq							
5817	T G C A T T C T G C A T T A T C A A T A A T T G C T T G A C C A T T A A C A G T A G C A C T A T A A	18rs21_a12.seq							
5818	T G C T T T C T G A A C T T C A A C H A T A G C A G A C C G T T G A A G T A G C T C A G T A A	515_a12.seq							
5817	T G C T T T C T G C A T T T T C A A C A G T A G T G A G C C G T T G A C C T A G C T G A G T A A	cjb111_a12.seq							
5838	T G C T T T C T G C T T T G T C A T C A A T A G C C G G A C C G T T A A C T G T T G C G C T A T A T	h36b_a12.seq							
G T C A A T G T G A A T T C A A C A T C T T T T T G T T T T T G C T G C T T T T T C C A C T T T T G C Majority									
5910		5920		5930		5940		5950	
5867	G T C A A T G T A A A T T C A A T A T C A G G T G T T T T A G C T G C T T T T T T C C A A T T T G C C	2603_a12.seq							
5867	G T C A A T G T A A A T T C A A T A T C A G G T G T T T T A G C T G C T T T T T T C C A A T T T G C C	18rs21_a12.seq							
5868	G T G A I C I T G A I T T C A A C A T C T T T T G T T T T T G C G G C T T T T C C A C T G C T I C	515_a12.seq							
5867	G T G A I C I T G A I T T C A A C A T C T T T T T T T T T T G C A G C T G C T G C I A C T G C T G C	cjb111_a12.seq							
5888	G T C A A T G T G A A T T C A A C A G C T T T G T G T T T T G C T I C T T T T T T G T A G C T T A G C T	h36b_a12.seq							
C A A A C C T T T A G C T G T G A A T T T T A A T G T G A A A C C A C G G T C A T C A G T T C C A A Majority									
5960		5970		5980		5990		6000	
5917	C A A I C C A T C A G C T G T G A A T T T T A A T G T G A A A C C A C G G C A T C A A T G C T A A	2603_a12.seq							
5917	C A A T C C A T C A G C T G T G A A T T T T A A T G T G A A A C C A C G G C A T C A A T G C T A A	18rs21_a12.seq							
5918	A A G A C C T T T G T C A G T C A A G A C A A G G C G G A A A C C I I G G T C A T C I G C T A C A A	515_a12.seq							
5917	A A G A C C T G T T G C A T T G A A G G A A A G A G G G A A A C C I T T G T C A T C I G C T A C A A	cjb111_a12.seq							
5938	C A A A C C T G T A I C T G T G A A T T T T A A A G T G A A A C C A C G G T C A T C A C G T T C A A	h36b_a12.seq							
G T T T G T A G T C T G T A T C C T T A A C A A A A G T T C C T G - - - - - C C G A T G C T T C A Majority									
6010		6020		6030		6040		6050	
5967	G T T T A T A G T C T G T A T C C T T A A C A A A A G T T I C T G I A G I I C I G A A G C T T I A	2603_a12.seq							
5967	G T T T A T A G T C T G T A T C C T T A A C A A A A G T T I C T G I A G I I C I G A A G C T T I A	18rs21_a12.seq							
5968	G T T T G T A A T T T G T A G C A T T A A G A G I I G A C C A I - - - - - C C A A T G T T A C A	515_a12.seq							
5967	G T T T G T A G T T T A A A A C A G G A A A A I C I I A C C A T - - - - - C C A A T G T T A C I	cjb111_a12.seq							
5988	C A T T T G T A A T C T G T A C C T T T A C A A A A G A G C C T G - - - - - A C G A T G C T T C T	h36b_a12.seq							
A G G T T A A C A G T G T T A C C C A T T G T C A A A C C A T T T G A C A T G C T A T C T G T C C A Majority									
6060		6070		6080		6090		6100	
6017	A G G T T A A C A G T G A A C C C A T T G T C A A A C C A T T T G A C A T I A T A T C T G T C C A	2603_a12.seq							
6017	A G G T T A A C A G T G A A C C C A T T G T C A A A C C A T T T G A C A T I A T A T C T G T C C A	18rs21_a12.seq							
6012	- - - G I A A A I A I C G T T T I I A A A G T C A A A C C I T T T G I C A T G C T A T C G T C C A	515_a12.seq							
6011	- - - T T A A C G T T G T T T I I G A A C C T T T A G I C A T G C T A T C A G T C C A	cjb111_a12.seq							
6032	A A G T T A A C A G T G T T A C C C A T T G T C A A A C C A T T T G A C A T G T A T C G A C C A	h36b_a12.seq							
A A C C A A G T T T T T G T A T T T A G A A C C T T T G T G A A T T T T T G T T T T A A C T T C G T Majority									
6110		6120		6130		6140		6150	
6067	A A C C A A G T T T T T G T A T T T A G A A C C T T T G T G A A T T T T T G T T T T A A C T T C A T	2603_a12.seq							
6067	A A C C A A G T T T T T G T A T T T A G A A C C T T T G T G A A T T T T T G T T T T A A C T T C A T	18rs21_a12.seq							
6059	G A I T A A I T T C T T A T A G T C I G A A C C T T T A A G C A T T T T T T G T T C C A A C A T G T	515_a12.seq							
6058	A A C C A G T T T T T A T A G T C I G A G C C T T T A A G A A T T T T T G T T C C A A C T A I G T	cjb111_a12.seq							
6082	A G C A A G G T T T T T G T A T T T A G A C C T T T I T G C A T T T T T G T T T T A A C T T C G T	h36b_a12.seq							
A A G G T A T A A C T T T A C C G A T T T C A G C A G T A G C A G T T G C T T T G T C T T T T T G A Majority									
6160		6170		6180		6190		6200	
6117	A A G G A A A A A C T T T A C C G A T T T C A G C A G T A G C A G T T G C T T T G T C A C G T G C A	2603_a12.seq							
6117	A A G G A A A A A C T T T A C C G A T T T C A G C A G T A G C A G T T G C T T T G T C A C G T G C A	18rs21_a12.seq							
6109	A I I T I T A A C A T C A C G A A A G A A G C I G A G A C A G T I C T T T G T C T T T T T T I G	515_a12.seq							
6108	A I I C T I T I I G T C A C C A A A T G I I G C I G A G A C A A A C C T T T G T C T T T T T T G G	cjb111_a12.seq							
6132	A A G G R A T I I C T T I A C C G A T T T C A G C A G T A G C I I T T G C T T T I T C T G C T T G A	h36b_a12.seq							
T A G T T A G C A T A A T C T G C G C C A G C T G T C A A A A G T C T A T T A A C A - C T G T C A A Majority									
6210		6220		6230		6240		6250	
6167	T A A T T A C C A T A A T T T G C C C C A G C T G T C A A A A G T C T A T T A A C A I C T G T C A A	2603_a12.seq							
6167	T A A T T A C C A T A A T T T G C C C C A G C T G T C A A A A G T C T A T T A A C A I C T G T C A A	18rs21_a12.seq							
6159	T I G T T G C C A T A A T C - - - - -	515_a12.seq							
6158	T I G T A C T A T A A T C - - - - -	cjb111_a12.seq							
6182	T A T T T G T C T A T A T C T G C G C C A G C T G C A A A A G T T G A A T T A T C A - C T G T C A I	h36b_a12.seq							
T - - T G T C A A G T T T G T T T T A G C A A A G T T T T T A T C T A T T T G T G G T T T T T Majority									
6260		6270		6280		6290		6300	
6217	T G T G T C A A A T C G T T T G T T T A G C A A A G T T T T A T C A A T T T T G G T T T T T	2603_a12.seq							
6217	T G T G T C A A A T C G T T T G T T T A G C A A A G T T T T A T C A A T T T T G G T T T T T	18rs21_a12.seq							
6173	- - - A A G T T T T T A T G T - - - G C A A A G T T T T A T C T A T T T G T G G T T T T T	515_a12.seq							
6172	- - - A A G A T T T T A T T - - - G C A A A G T T T T A T C T A T T T G T G G T T T T T	cjb111_a12.seq							
6231	T - - G A A C A A T T T A T T T G C T T T A G C A A A G T T T T T T C A T T T T G T G G T G C T T	h36b_a12.seq							

FIGURE 19M

70/487

CTTCACTGTTCTTTTGGATAAACAATGCGCATCTTCAACAACACCATCTTCC Majority									
6310		6320		6330		6340		6350	
6267	CTTCACTGTTCTTTTGGATAAACAATGCGCATCTTCAACAACACCATCTTCC	2603_a12.seq							
6267	CTTCACTGTTCTTTTGGATAAACAATGCGCATCTTCAACAACACCATCTTCC	18rs21_a12.seq							
6214	TTTCACTGTTCTTTTGGATAAACAATGCGCATCTTCAACAACACCATCTTCC	515_a12.seq							
6213	TTTCACTGTTCTTTTGGATAAACAATGCGCATCTTCAACAACACCATCTTCC	cjb111_a12.seq							
6279	CTTCTGTAATCTTTTGGATAAACAATGCGCATCTTCAACAACACCATCTTCC	h36b_a12.seq							
TTTACCAATGGAAGAGTGATTTTAACTGGAAGTCTTTTGAATCAGCCAC Majority									
6360		6370		6380		6390		6400	
6317	TTTACCAATGGAAGAGTGATTTTAACTGGAAGTCTTTTGAATCAGCCAC	2603_a12.seq							
6317	TTTACCAATGGAAGAGTGATTTTAACTGGAAGTCTTTTGAATCAGCCAC	18rs21_a12.seq							
6264	TTTACCAATGGAAGAGTGATTTTAACTGGAAGTCTTTTGAATCAGCCAC	515_a12.seq							
6263	TTTACCAATGGAAGAGTGATTTTAACTGGAAGTCTTTTGAATCAGCCAC	cjb111_a12.seq							
6329	TTTAAACAAGGAAGAGTGATTTTAACTGGAAGTCTTTTGAATCAGCCAC	h36b_a12.seq							
GATGGAACCATTTATTGTTGTAAGTAGATTTTCTTTCAATTCAACGATTT Majority									
6410		6420		6430		6440		6450	
6367	GATGGAACCATTTATTGTTGTAAGTAGATTTTCTTTCAATTCAACGATTT	2603_a12.seq							
6367	GATGGAACCATTTATTGTTGTAAGTAGATTTTCTTTCAATTCAACGATTT	18rs21_a12.seq							
6314	GATGGAACCATTTATTGTTGTAAGTAGATTTTCTTTCAATTCAACGATTT	515_a12.seq							
6313	GATGGAACCATTTATTGTTGTAAGTAGATTTTCTTTCAATTCAACGATTT	cjb111_a12.seq							
6379	AACTTTGTCATTTATTGTAAGTAGATTTTCTTTCAATTCAACGATTT	h36b_a12.seq							
GGTACTTTCCTTTTAAATTTTGTAGTGTAAAAACAA - - - - - TACCTTTT Majority									
6460		6470		6480		6490		6500	
6417	AACTTTGTCATTTATTGTAAGTAGATTTTCTTTCAATTCAACGATTT	2603_a12.seq							
6417	AACTTTGTCATTTATTGTAAGTAGATTTTCTTTCAATTCAACGATTT	18rs21_a12.seq							
6364	GGTAAAGTTTCTTTTAAATTTTGTAGTGTAAAAACAA - - - - - TACCTTTT	515_a12.seq							
6363	GGTAAAGTTTCTTTTAAATTTTGTAGTGTAAAAACAA - - - - - TACCTTTT	cjb111_a12.seq							
6429	GGTAAAGTTTCTTTTAAATTTTGTAGTGTAAAAACAA - - - - - TACCTTTT	h36b_a12.seq							
TCTGTTGTCATTC - - - - - TTTAAG Majority									
6510		6520		6530		6540		6550	
6467	TCTGTTGTCATTC - - - - - TTTAAG	2603_a12.seq							
6467	TCTGTTGTCATTC - - - - - TTTAAG	18rs21_a12.seq							
6408	TCTGTTGTCATTC - - - - - TTTAAG	515_a12.seq							
6407	TCTGTTGTCATTC - - - - - TTTAAG	cjb111_a12.seq							
6473	TCTGTTGTCATTC - - - - - TTTAAG	h36b_a12.seq							
AACACCATCTTTCATTAATTTCTGTTGGTTTTAAATTTGTTA - CTTCCTTAC Majority									
6560		6570		6580		6590		6600	
6517	AACACCATCTTTCATTAATTTCTGTTGGTTTTAAATTTGTTA - CTTCCTTAC	2603_a12.seq							
6517	AACACCATCTTTCATTAATTTCTGTTGGTTTTAAATTTGTTA - CTTCCTTAC	18rs21_a12.seq							
6428	AACACCATCTTTCATTAATTTCTGTTGGTTTTAAATTTGTTA - CTTCCTTAC	515_a12.seq							
6427	AACACCATCTTTCATTAATTTCTGTTGGTTTTAAATTTGTTA - CTTCCTTAC	cjb111_a12.seq							
6493	AACACCATCTTTCATTAATTTCTGTTGGTTTTAAATTTGTTA - CTTCCTTAC	h36b_a12.seq							
CACTTTCGGTAATGTAATTTTG - - - - - TTTTATCTTCATTTCATAAC - - - AGC Majority									
6610		6620		6630		6640		6650	
6566	CACTTTCGGTAATGTAATTTTG - - - - - TTTTATCTTCATTTCATAAC - - - AGC	2603_a12.seq							
6566	CACTTTCGGTAATGTAATTTTG - - - - - TTTTATCTTCATTTCATAAC - - - AGC	18rs21_a12.seq							
6478	CACTTTCGGTAATGTAATTTTG - - - - - TTTTATCTTCATTTCATAAC - - - AGC	515_a12.seq							
6477	CACTTTCGGTAATGTAATTTTG - - - - - TTTTATCTTCATTTCATAAC - - - AGC	cjb111_a12.seq							
6528	CACTTTCGGTAATGTAATTTTG - - - - - TTTTATCTTCATTTCATAAC - - - AGC	h36b_a12.seq							
AAAGAAAGCACCCTTCGATTTCTTTAGAT - - - CCTTCGCCAAAGTAACCTC Majority									
6660		6670		6680		6690		6700	
6616	AAAGAAAGCACCCTTCGATTTCTTTAGAT - - - CCTTCGCCAAAGTAACCTC	2603_a12.seq							
6616	AAAGAAAGCACCCTTCGATTTCTTTAGAT - - - CCTTCGCCAAAGTAACCTC	18rs21_a12.seq							
6521	AAAGAAAGCACCCTTCGATTTCTTTAGAT - - - CCTTCGCCAAAGTAACCTC	515_a12.seq							
6520	AAAGAAAGCACCCTTCGATTTCTTTAGAT - - - CCTTCGCCAAAGTAACCTC	cjb111_a12.seq							
6571	AAAGAAAGCACCCTTCGATTTCTTTAGAT - - - CCTTCGCCAAAGTAACCTC	h36b_a12.seq							
TAAGGTCAGTAATTTGTTTACCTATGTAGTCTTTTCCATTTCATACCTTTT Majority									
6710		6720		6730		6740		6750	
6663	TAAGGTCAGTAATTTGTTTACCTATGTAGTCTTTTCCATTTCATACCTTTT	2603_a12.seq							
6663	TAAGGTCAGTAATTTGTTTACCTATGTAGTCTTTTCCATTTCATACCTTTT	18rs21_a12.seq							
6571	TAAGGTCAGTAATTTGTTTACCTATGTAGTCTTTTCCATTTCATACCTTTT	515_a12.seq							
6570	TAAGGTCAGTAATTTGTTTACCTATGTAGTCTTTTCCATTTCATACCTTTT	cjb111_a12.seq							
6618	TAAGGTCAGTAATTTGTTTACCTATGTAGTCTTTTCCATTTCATACCTTTT	h36b_a12.seq							

FIGURE 19N

71/487

G T T C C T G G G A A G T T A C T T T T G T C A A A A T T A G C T T G T G T T T G G A C A A T C T T Majority									
6760		6770		6780		6790		6800	
6713	G T T C C T G G G A A G T T A C T T T T G T	A A G A T T	G A T T C G G T T T G G A A A A T C T T	2603_a12.seq					
6713	G T T C C T G G G A A G T T A C T T T T G T	A A G A T T	G A T T C G G T T T G G A A A A T C T T	18rs21_a12.seq					
6621	G T A C C A G C A G	T A A A A C C G T C A A A	A G A G T T G A G C C A I C A C A A T C T T	515_a12.seq					
6620	G T A C C T T C A G	T A A A G T T A T C A A A	A G A G C T T T G T G C C A I C A C A A T C T T	cjb111_a12.seq					
6668	A T T C C T G G G A A A T T	T G G T T A G C A A A A T T A	C G G A T G T T T G A C A A A T T T	h36b_a12.seq					
G T G C A A G G T C A C T G T A T T A G T - - - T G T - - - - - T G C T T C A T C C G C A A A C C Majority									
6810		6820		6830		6840		6850	
6763	G T G C A A A G T C A C T G T A T T A G T	- - - T G T	- - - - - T G C T T C A T C C G C A A A C C	2603_a12.seq					
6763	G T G C A A A G T C A C T G T A T T A G T	- - - T G T	- - - - - T G C T T C A T C C G C A A A C C	18rs21_a12.seq					
6668	G T G C A A G G T C A C T G T	A G T A G T T T	- - - - - T G C T T C A T C C G C A A A C C	515_a12.seq					
6667	G T G C A A G G T C A C A G T A T T A G T	- - - T G T	- - - - - T G C G T C A T C C G C A A A C C	cjb111_a12.seq					
6718	G T G T A A G G T T A C T G T	T T A G T - - -	G A T A I T T C C A A C T C A G C A G C A A A T A	h36b_a12.seq					
C T G G T G C A A C T G A G A A C A A T G A C G T T A A A G T C A G T A A C A A T G C C G A G A A C Majority									
6860		6870		6880		6890		6900	
6804	C T G G T G C A A C T G A G A	A C A A T G A C G T T A A A G T C A G T A A C A A T G C C G A G A A C	2603_a12.seq						
6804	C T G G T G C A A C T G A G A	A C A A T G A C G T T A A A G T C A G T A A C A A T G C C G A G A A C	18rs21_a12.seq						
6712	C T G G T G C A A C T G A G A A C A A T A	I G T T A A G G T C A G T A G C A A T G C C G A G A A A G	515_a12.seq						
6708	C T G G T G C A A C T G A G A A A	A G T G A C G T T A A G T C A A T A G C A G T G C G A G A A C	cjb111_a12.seq						
6765	C T G G A G C T A C G A	A A C A A G A I G T T A A A A T A A T A C A A T G C C G A G A A C	h36b_a12.seq						
A T T G C A A A A T A T T T T G T T G A T T C T T T T C A T T T C T A T C T C C T T C T T A T T T T A Majority									
6910		6920		6930		6940		6950	
6854	A T T G C A A A A T A T T T T G T T G A T T C	T T T T C A T T T C T A T C T C C T T C T T A T T T T A	2603_a12.seq						
6854	A T T G C A A A A T A T T T T G T T G A T T C	T T T T C A T T T C T A T C T C C T T C T T A T T T T A	18rs21_a12.seq						
6762	A T T G C A A A A T A T T T T G T T G A T T	T T T T C A T T T C T A T C T C C T T C T T A T T T T A	515_a12.seq						
6758	A T T G T A A G A A A T T T T G T T G A T T	T T T T C A T T T C T A T C T C C T T C T T A T T T T A	cjb111_a12.seq						
6815	A T T G C A A A A T A T T T T G T T G A T T C	T T T T C A T T T C T A T C T C C T T C T T A T T T T A	h36b_a12.seq						
G T T A A T C A A C A T G A T T A A T A A T A T G C G G A T T T T A A T A - C - A C C G C A G C A C Majority									
6960		6970		6980		6990		7000	
6904	G T T A A T C A A C A T G A T T A A T A A T A T	G C G G A T T T T A A T A - C - A C C G C A G C A C	2603_a12.seq						
6904	G T T A A T C A A C A T G A T T A A T A A T A T	G C G G A T T T T A A T A - C - A C C G C A G C A C	18rs21_a12.seq						
6812	G T T A A T C A A C A T G A T T A A T A A T A T	G C G G A T T T T A A T A - C - A C C G C A G C A C	515_a12.seq						
6808	G T T A A T C A A C A T A A A T A A T A A T A	C G G A T T A T A A T A I I I - A C C G C A G C A C	cjb111_a12.seq						
6865	G T T A A T C A A C A T A A A T A A T A A T A	C G G A T T A T A A T A - C I A C C G C A G C A C	h36b_a12.seq						
C A C T C C C T T C A A G T C A T G G A A T T T T A G T T A A T T A A G A A T A C T A A A G Majority									
7010		7020		7030		7040		7050	
6952	C A C T C C C T T C A A G T C A T G G A A T T T	T A G T T A A T T A A G A A T A C T A A A G	2603_a12.seq						
6952	C A C T C C C T T C A A G T C A T G G A A T T T	T A G T T A A T T A A G A A T A C T A A A G	18rs21_a12.seq						
6860	C A C T C C C T T C A A G T C A T G G A A T T T	T A G T T A A T T A A G A A T A C T A A A G	515_a12.seq						
6857	C A C T C C T T T C	G A A T T A T A T T A A T T A A G A A T A C T A A A A	cjb111_a12.seq						
6914	C A C T C C T T T C A A A A T A T	A T T T A A T T A A T A A T A A T A A T A A G	h36b_a12.seq						
C G C A T A A T T T T T A A T C T T T T T T G A T G G A C A T A T C A C T A G A T T T C T T A T A C Majority									
7060		7070		7080		7090		7100	
7002	C G C A T A A T T T T T A A T C T T T T T T G	A T G G A C A T A T C A C T A G A T T T C T T A T A C	2603_a12.seq						
7002	C G C A T A A T T T T T A A T C T T T T T T G	A T G G A C A T A T C A C T A G A T T T C T T A T A C	18rs21_a12.seq						
6910	C G C A T A A T T T T T A A T C T T T T T T G	A T G G A C A T A T C A C T A G A T T T C T T A T A C	515_a12.seq						
6899	C A C A T A A T T T T T A A T C T T T T T T G	A T G A T A T A T C A C T A G A T T T C T T A T A	cjb111_a12.seq						
6952	C A C A T A A T T T T T A A T C T T T T T T G	A T G A T A T A T C A C T A G A T T T C T T A T A	h36b_a12.seq						
C T T T T C C A A A T A T A A A T T C C A C C T G C A A T A G A C A T C A T A G C T C C A C C T A T Majority									
7110		7120		7130		7140		7150	
7052	C T T T T C C A A A T A T A A A T T C C A C	C C T G C A A T A G A C A T C A T A G C T C C A C C T A T	2603_a12.seq						
7052	C T T T T C C A A A T A T A A A T T C C A C	C C T G C A A T A G A C A T C A T A G C T C C A C C T A T	18rs21_a12.seq						
6960	C T T T T C C A A A T A T A A A T T C C A C	C T G C A A T A G A C A T C A T A G C T C C A C C T A T	515_a12.seq						
6949	C T T T T C C A A A T A T A A A T T C C A C	C T G C A A T A G A C A T C A T A G C T C C A C C T A T	cjb111_a12.seq						
7002	C T T T T C C A A A T A T A A A T T C C A C	C C T G C A A T A G A C A T C A T A G C T C C A C C T A T	h36b_a12.seq						
T A A A A T G A A A G A T A G A A T T C C T T T C C C A C C T G T C A T A G G A A T A A T T C C T T Majority									
7160		7170		7180		7190		7200	
7102	T A A A A T G A A A G A T A G A A T T C C T	T T T C C C A C C T G T C A T A G G A A T A A T T C C T T	2603_a12.seq						
7102	T A A A A T G A A A G A T A G A A T T C C T	T T T C C C A C C T G T C A T A G G A A T A A T T C C T T	18rs21_a12.seq						
7010	T A A A A T G A A A G A T A G A A T T C C T	T T T C C C A C C T G T C T A G G A A T A A T T C C T T	515_a12.seq						
6999	T A A A A T G A A A G A T A G A A T T C C T	T T T C C C A C C T G T C A T G G A A T A A T T C C T T	cjb111_a12.seq						
7052	T A A A A T G A A A G A T A G A A T T C C T	T T T C C C A C C T G T C A T G G A A T A A T T C C T T	h36b_a12.seq						

FIGURE 190

72/487

TTGGTGGGAATATGCGTGTGTTGGTAATTAATGCTTGTACCTTCCTCATGA Majority	
	7210 7220 7230 7240 7250
7152	TTGGTGGGAATATGCGTGTGTTGGTAATTAATGCTTGTACCTTCCTCATGA 2603_a12.seq
7152	TTGGTGGGAATATGCGTGTGTTGGTAATTAATGCTTGTACCTTCCTCATGA 18rs21_a12.seq
7060	TTGGTGGGAATATGCGTGTGTTGGTAATTAATGCTTGTACCTTCCTCATGA 515_a12.seq
7049	TTGGTGGGAATATGCGTGTGTTGGTAATTAATGCTTGTACCTTCCTCATGA cjb111_a12.seq
7102	TTGGTGGGAATATGCGTGTGTTGGTAATTAATGCTTGTACCTTCCTCATGA h36b_a12.seq
TATTCAGAAATCTGTTTATTAACAGCTATTATATTTTTTATCGATCCTTT Majority	
	7260 7270 7280 7290 7300
7202	TATTCAGAAATCTGTTTATTAACAGCTATTATATTTTTTATCGATCCTTT 2603_a12.seq
7202	TATTCAGAAATCTGTTTATTAACAGCTATTATATTTTTTATCGATCCTTT 18rs21_a12.seq
7110	TATTCAGAAATCTGTTTATTAACAGCTATTATATTTTTTATCGATCCTTT 515_a12.seq
7099	TATTCAGAAATCTGTTTATTAACAGCTATTATATTTTTTATCGATCCTTT cjb111_a12.seq
7152	TATTCAGAAATCTGTTTATTAACAGCTATTATATTTTTTATCGATCCTTT h36b_a12.seq
AACCACCTTCAAAAGTTAAATTTGGTTTATTAGTAATTTTTTGATAATCCT Majority	
	7310 7320 7330 7340 7350
7252	AACCACCTTCAAAAGTTAAATTTGGTTTATTAGTAATTTTTTGATAATCCT 2603_a12.seq
7252	AACCACCTTCAAAAGTTAAATTTGGTTTATTAGTAATTTTTTGATAATCCT 18rs21_a12.seq
7160	AACCACCTTCAAAAGTTAAATTTGGTTTATTAGTAATTTTTTGATAATCCT 515_a12.seq
7149	AACAACTTCAAAAGTTAAATTTGGTTTATTAGTAATTTTTTGATAATCCT cjb111_a12.seq
7202	AACAACTTCAAAAGTTAAATTTGGTTTATTAGTAATTTTTTGATAATCCT h36b_a12.seq
CCGGCGAAACTGCTTCTATTAACCTGATATTTGCCATCTTTTCAAATCTTTG Majority	
	7360 7370 7380 7390 7400
7302	CCGGCGAAACTGCTTCTATTAACCTGATATTTGCCATCTTTTCAAATCTTTG 2603_a12.seq
7302	CCGGCGAAACTGCTTCTATTAACCTGATATTTGCCATCTTTTCAAATCTTTG 18rs21_a12.seq
7210	CCGGCGAAACTGCTTCTATTAACCTGATATTTGCCATCTTTTCAAATCTTTG 515_a12.seq
7199	CCGGCGAAACTGCTTCTATTAACCTGATATTTGCCATCTTTTCAAATCTTTG cjb111_a12.seq
7252	CCGGCGAAACTGCTTCTATTAACCTGATATTTGCCATCTTTTCAAATCTTTG h36b_a12.seq
TAAGAAATTTTTCGGTTTTCTCCCGTCACTACTTTTGAATTATTATTTTTT Majority	
	7410 7420 7430 7440 7450
7352	TAAGAAATTTTTCGGTTTTCTCCCGTCACTACTTTTGAATTATTATTTTTT 2603_a12.seq
7352	TAAGAAATTTTTCGGTTTTCTCCCGTCACTACTTTTGAATTATTATTTTTT 18rs21_a12.seq
7260	TAAGAAATTTTTCGGTTTTCTCCCGTCACTACTTTTGAATTATTATTTTTT 515_a12.seq
7249	TAAGAAATTTTTCGGTTTTCTCCCGTCACTACTTTTGAATTATTATTTTTT cjb111_a12.seq
7302	TAAGAAATTTTTCGGTTTTCTCCCGTCACTACTTTTGAATTATTATTTTTT h36b_a12.seq
TATTGGTAAATAAAGTTTATAATCTTCATTAAATTTCTTGAAGTTCAAACG Majority	
	7460 7470 7480 7490 7500
7402	TATTGGTAAATAAAGTTTATAATCTTCATTAAATTTCTTGAAGTTCAAACG 2603_a12.seq
7402	TATTGGTAAATAAAGTTTATAATCTTCATTAAATTTCTTGAAGTTCAAACG 18rs21_a12.seq
7310	TATTGGTAAATAAAGTTTATAATCTTCATTAAATTTCTTGAAGTTCAAACG 515_a12.seq
7299	TATTGGTAAATAAAGTTTATAATCTTCATTAAATTTCTTGAAGTTCAAACG cjb111_a12.seq
7352	TATTGGTAAATAAAGTTTATAATCTTCATTAAATTTCTTGAAGTTCAAACG h36b_a12.seq
TAGCTCCTTTTGAGAAGCAACTTATTATTATCTTTATCAACTTTTATAAAT Majority	
	7510 7520 7530 7540 7550
7452	TAGCTCCTTTTGAGAAGCAACTTATTATTATCTTTATCAACTTTTATAAAT 2603_a12.seq
7452	TAGCTCCTTTTGAGAAGCAACTTATTATTATCTTTATCAACTTTTATAAAT 18rs21_a12.seq
7360	TAGCTCCTTTTGAGAAGCAACTTATTATTATCTTTATCAACTTTTATAAAT 515_a12.seq
7349	TAGCTCCTTTTGAGAAGCAACTTATTATTATCTTTATCAACTTTTATAAAT cjb111_a12.seq
7402	TAGCTCCTTTTGAGAAGCAACTTATTATTATCTTTATCAACTTTTATAAAT h36b_a12.seq
TCAATTTTCACTTAACCTTCTTCTCGTTTTTAAATCGTTATTGTAGGATATTG Majority	
	7560 7570 7580 7590 7600
7502	TCAATTTTCACTTAACCTTCTTCTCGTTTTTAAATCGTTATTGTAGGATATTG 2603_a12.seq
7502	TCAATTTTCACTTAACCTTCTTCTCGTTTTTAAATCGTTATTGTAGGATATTG 18rs21_a12.seq
7410	TCAATTTTCACTTAACCTTCTTCTCGTTTTTAAATCGTTATTGTAGGATATTG 515_a12.seq
7399	TCAATTTTCACTTAACCTTCTTCTCGTTTTTAAATCGTTATTGTAGGATATTG cjb111_a12.seq
7452	TCAATTTTCACTTAACCTTCTTCTCGTTTTTAAATCGTTATTGTAGGATATTG h36b_a12.seq
TCTCACATCACGAATTTTAGGGATTGCAAAATCTCTAAAGTGTATTAGGAT Majority	
	7610 7620 7630 7640 7650
7552	TCTCACATCACGAATTTTAGGGATTGCAAAATCTCTAAAGTGTATTAGGAT 2603_a12.seq
7552	TCTCACATCACGAATTTTAGGGATTGCAAAATCTCTAAAGTGTATTAGGAT 18rs21_a12.seq
7460	TCTCACATCACGAATTTTAGGGATTGCAAAATCTCTAAAGTGTATTAGGAT 515_a12.seq
7449	TCTCACATCACGAATTTTAGGGATTGCAAAATCTCTAAAGTGTATTAGGAT cjb111_a12.seq
7502	TCTCACATCACGAATTTTAGGGATTGCAAAATCTCTAAAGTGTATTAGGAT h36b_a12.seq

FIGURE 19P

73/487

	CCTCTGACTTAGGATTCAATGTTGTTCTACCAATTAGTGTTCATAGAATTTG	Majority
	7660 7670 7680 7690 7700	
7602	CCTCTGACTTAGGATTCAATGTTGTTCTACCAATTAGTGTTCATAGAATTTG	2603_a12.seq
7602	CCTCTGACTTAGGATTCAATGTTGTTCTACCAATTAGTGTTCATAGAATTTG	18rs21_a12.seq
7510	CCTCTGACTTAGGATTCAATGTTGTTCTACCAATTAGTGTTCATAGAATTTG	515_a12.seq
7499	CCTCTGACTTAGGATTCAATGTTGTTCTACCAATTAGTGTTCATAGAATTTG	cjb111_a12.seq
7552	CCTCTGACTTAGGATTCAATGTTGTTCTACCAATTAGTGTTCATAGAATTTG	h36b_a12.seq
	TTACTTTATAAAACTGTCATCTAGTTTTCACATCATATGTGAGTGTTACTTT	Majority
	7710 7720 7730 7740 7750	
7652	TTACTTTATAAAACTGTCATCTAGTTTTCACATCATATGTGAGTGTTACTTT	2603_a12.seq
7652	TTACTTTATAAAACTGTCATCTAGTTTTCACATCATATGTGAGTGTTACTTT	18rs21_a12.seq
7560	TTACTTTATAAAACTGTCATCTAGTTTTCACATCATATGTGAGTGTTACTTT	515_a12.seq
7549	TTACTTTATAAAACTGTCATCTAGTTTTCACATCATATGTGAGTGTTACTTT	cjb111_a12.seq
7602	TTACTTTATAAAACTGTCATCTAGTTTTCACATCATATGTGAGTGTTACTTT	h36b_a12.seq
	TTGACCTTCTCCTAAATTCAAAACCTCTAAACATAGAGTTTATTTCCGATGT	Majority
	7760 7770 7780 7790 7800	
7702	TTGACCTTCTCCTAAATTCAAAACCTCTAAACATAGAGTTTATTTCCGATGT	2603_a12.seq
7702	TTGACCTTCTCCTAAATTCAAAACCTCTAAACATAGAGTTTATTTCCGATGT	18rs21_a12.seq
7610	TTGACCTTCTCCTAAATTCAAAACCTCTAAACATAGAGTTTATTTCCGATGT	515_a12.seq
7599	TTGACCTTCTCCTAAATTCAAAACCTCTAAACATAGAGTTTATTTCCGATGT	cjb111_a12.seq
7652	TTGACCTTCTCCTAAATTCAAAACCTCTAAACATAGAGTTTATTTCCGATGT	h36b_a12.seq
	ATTCTAATTTAAACCCCTTAAGTATTCACCATCATTATTAGGCCCAACCA	Majority
	7810 7820 7830 7840 7850	
7752	ATTCTAATTTAAACCCCTTAAGTATTCACCATCATTATTAGGCCCAACCA	2603_a12.seq
7752	ATTCTAATTTAAACCCCTTAAGTATTCACCATCATTATTAGGCCCAACCA	18rs21_a12.seq
7660	ATTCTAATTTAAACCCCTTAAGTATTCACCATCATTATTAGGCCCAACCA	515_a12.seq
7649	ATTCTAATTTAAACCCCTTAAGTATTCACCATCATTATTAGGCCCAACCA	cjb111_a12.seq
7702	ATTCTAATTTAAACCCCTTAAGTATTCACCATCATTATTAGGCCCAACCA	h36b_a12.seq
	GTTGCAATACCATCCTTCATTACACTTCCATCATTTCCTGTAAAGTATA	Majority
	7860 7870 7880 7890 7900	
7802	GTTGCAATACCATCCTTCATTACACTTCCATCATTTCCTGTAAAGTATA	2603_a12.seq
7802	GTTGCAATACCATCCTTCATTACACTTCCATCATTTCCTGTAAAGTATA	18rs21_a12.seq
7710	GTTGCAATACCATCCTTCATTACACTTCCATCATTTCCTGTAAAGTATA	515_a12.seq
7699	GTTGCAATACCATCCTTCATTACACTTCCATCATTTCCTGTAAAGTATA	cjb111_a12.seq
7752	GTTGCAATACCATCCTTCATTACACTTCCATCATTTCCTGTAAAGTATA	h36b_a12.seq
	ATCACTTGGCTGTAAATGTTTGTCCATTACCAAGCTGTAAATTGATTTTAT	Majority
	7910 7920 7930 7940 7950	
7852	ATCACTTGGCTGTAAATGTTTGTCCATTACCAAGCTGTAAATTGATTTTAT	2603_a12.seq
7852	ATCACTTGGCTGTAAATGTTTGTCCATTACCAAGCTGTAAATTGATTTTAT	18rs21_a12.seq
7760	ATCACTTGGCTGTAAATGTTTGTCCATTACCAAGCTGTAAATTGATTTTAT	515_a12.seq
7749	ATCACTTGGCTGTAAATGTTTGTCCATTACCAAGCTGTAAATTGATTTTAT	cjb111_a12.seq
7802	ATCACTTGGCTGTAAATGTTTGTCCATTACCAAGCTGTAAATTGATTTTAT	h36b_a12.seq
	CACCCATAGGATCTTCGATAGTTCCATTAAACAATTGAGTTTCTTTTGT	Majority
	7960 7970 7980 7990 8000	
7902	CACCCATAGGATCTTCGATAGTTCCATTAAACAATTGAGTTTCTTTTGT	2603_a12.seq
7902	CACCCATAGGATCTTCGATAGTTCCATTAAACAATTGAGTTTCTTTTGT	18rs21_a12.seq
7810	CACCCATAGGATCTTCGATAGTTCCATTAAACAATTGAGTTTCTTTTGT	515_a12.seq
7799	CACCCATAGGATCTTCGATAGTTCCATTAAACAATTGAGTTTCTTTTGT	cjb111_a12.seq
7852	CACCCATAGGATCTTCGATAGTTCCATTAAACAATTGAGTTTCTTTTGT	h36b_a12.seq
	AAAATCGTTTCAAATTTGTTGCTGAATTTTAGATAAAAATTTCAATTGTTAGA	Majority
	8010 8020 8030 8040 8050	
7952	AAAATCGTTTCAAATTTGTTGCTGAATTTTAGATAAAAATTTCAATTGTTAGA	2603_a12.seq
7952	AAAATCGTTTCAAATTTGTTGCTGAATTTTAGATAAAAATTTCAATTGTTAGA	18rs21_a12.seq
7860	AAAATCGTTTCAAATTTGTTGCTGAATTTTAGATAAAAATTTCAATTGTTAGA	515_a12.seq
7849	AAAATCGTTTCAAATTTGTTGCTGAATTTTAGATAAAAATTTCAATTGTTAGA	cjb111_a12.seq
7902	AAAATCGTTTCAAATTTGTTGCTGAATTTTAGATAAAAATTTCAATTGTTAGA	h36b_a12.seq
	TGTATCGGCTGAAGTTACGATAGGGGTGTAGTACTCAGCTTTTGAAGAGA	Majority
	8060 8070 8080 8090 8100	
8002	TGTATCGGCTGAAGTTACGATAGGGGTGTAGTACTCAGCTTTTGAAGAGA	2603_a12.seq
8002	TGTATCGGCTGAAGTTACGATAGGGGTGTAGTACTCAGCTTTTGAAGAGA	18rs21_a12.seq
7910	TGTATCGGCTGAAGTTACGATAGGGGTGTAGTACTCAGCTTTTGAAGAGA	515_a12.seq
7899	TGTATCGGCTGAAGTTACGATAGGGGTGTAGTACTCAGCTTTTGAAGAGA	cjb111_a12.seq
7952	TGTATCGGCTGAAGTTACGATAGGGGTGTAGTACTCAGCTTTTGAAGAGA	h36b_a12.seq

FIGURE 19Q

74/487

	ACGACCTTATTAGTTCTGTGATTCTCCATCTGAAAGTTTAAAAGCTTCC	Majority
	8110 8120 8130 8140 8150	
8052	ACGACCTTATTAGTTCTGTGATTCTCCATCTGAAAGTTTAAAAGCTTCC	2603_al2.seq
8052	ACGACCTTATTAGTTCTGTGATTCTCCATCTGAAAGTTTAAAAGCTTCC	18rs21_al2.seq
7960	ACGACCTTATTAGTTCTGTGATTCTCCATCTGAAAGTTTAAAAGCTTCC	515_al2.seq
7949	ATGACCTTATTAGTTCTGTGATTCTCCATCTGAAAGTTTAAAAGCTTCC	cjb111_al2.seq
8002	ATGACCTTATTAGTTCTGTGATTCTCCATCTGAAAGTTTAAAAGCTTCC	h36b_al2.seq
	TCTTTCAATTTTGAAGTACCATCTTGATTTTCTTATACTCCTCAT	Majority
	8160 8170 8180 8190 8200	
8102	TCTTTCAATTTTGAAGTACCATCTTGATTTTCTTATACTCCTCAT	2603_al2.seq
8102	TCTTTCAATTTTGAAGTACCATCTTGATTTTCTTATACTCCTCAT	18rs21_al2.seq
8010	TCTTTCAATTTTGAAGTACCATCTTGATTTTCTTATACTCCTCAT	515_al2.seq
7999	TCTTTCAATTTTGAAGTACCATCTTGATTTTCTTATACTCCTCAT	cjb111_al2.seq
8052	TCTTTCAATTTTGAAGTACCATCTTGATTTTCTTATACTCCTCAT	h36b_al2.seq
	ATAAACTTGTCTAAAACCCAGATATATCGATACCAAAATTAATAATGTCA	Majority
	8210 8220 8230 8240 8250	
8152	ATAAACTTGTCTAAAACCCAGATATATCGATACCAAAATTAATAATGTCA	2603_al2.seq
8152	ATAAACTTGTCTAAAACCCAGATATATCGATACCAAAATTAATAATGTCA	18rs21_al2.seq
8060	ATAAACTTGTCTAAAACCCAGATATATCGATACCAAAATTAATAATGTCA	515_al2.seq
8049	ATAAACTTGTCTAAAACCCAGATATATCGATACCAAAATTAATAATGTCA	cjb111_al2.seq
8102	ATAAACTTGTCTAAAACCCAGATATATCGATACCAAAATTAATAATGTCA	h36b_al2.seq
	AATTTTCTGTTTTAAACTATTTATATAAAGTTTGCTTGGTGTTCATGT	Majority
	8260 8270 8280 8290 8300	
8202	AATTTTCTGTTTTAAACTATTTATATAAAGTTTGCTTGGTGTTCATGT	2603_al2.seq
8202	AATTTTCTGTTTTAAACTATTTATATAAAGTTTGCTTGGTGTTCATGT	18rs21_al2.seq
8110	AATTTTCTGTTTTAAACTATTTATATAAAGTTTGCTTGGTGTTCATGT	515_al2.seq
8099	AATTTTCTGTTTTAAACTATTTATATAAAGTTTGCTTGGTGTTCATGT	cjb111_al2.seq
8152	AATTTTCTGTTTTAAACTATTTATATAAAGTTTGCTTGGTGTTCATGT	h36b_al2.seq
	TCTTTCACTGGTCCATTTTCGATAAAATTGTACCTTTAGGGTAATTAAGATT	Majority
	8310 8320 8330 8340 8350	
8252	TCTTTCACTGGTCCATTTTCGATAAAATTGTACCTTTAGGGTAATTAAGATT	2603_al2.seq
8252	TCTTTCACTGGTCCATTTTCGATAAAATTGTACCTTTAGGGTAATTAAGATT	18rs21_al2.seq
8160	TCTTTCACTGGTCCATTTTCGATAAAATTGTACCTTTAGGGTAATTAAGATT	515_al2.seq
8149	TCTTTCACTGGTCCATTTTCGATAAAATTGTACCTTTAGGGTAATTAAGATT	cjb111_al2.seq
8202	TCTTTCACTGGTCCATTTTCGATAAAATTGTACCTTTAGGGTAATTAAGATT	h36b_al2.seq
	TAAATCTAAATAATGAAGTTTTTGTAAAGTTTCCAGAGATTATCTGTGTTT	Majority
	8360 8370 8380 8390 8400	
8302	TAAATCTAAATAATGAAGTTTTTGTAAAGTTTCCAGAGATTATCTGTGTTT	2603_al2.seq
8302	TAAATCTAAATAATGAAGTTTTTGTAAAGTTTCCAGAGATTATCTGTGTTT	18rs21_al2.seq
8210	TAAATCTAAATAATGAAGTTTTTGTAAAGTTTCCAGAGATTATCTGTGTTT	515_al2.seq
8199	TAAATCTAAATAATGAAGTTTTTGTAAAGTTTCCAGAGATTATCTGTGTTT	cjb111_al2.seq
8252	TAAATCTAAATAATGAAGTTTTTGTAAAGTTTCCAGAGATTATCTGTGTTT	h36b_al2.seq
	GATAACTATCTAAGGGAAACAAAAGTAACCTCTCCCATTTTCCTTTTATA	Majority
	8410 8420 8430 8440 8450	
8352	GATAACTATCTAAGGGAAACAAAAGTAACCTCTCTCCCATTTTCCTTTTATA	2603_al2.seq
8352	GATAACTATCTAAGGGAAACAAAAGTAACCTCTCTCCCATTTTCCTTTTATA	18rs21_al2.seq
8260	GATAACTATCTAAGGGAAACAAAAGTAACCTCTCTCCCATTTTCCTTTTATA	515_al2.seq
8249	GATAACTATCTAAGGGAAACAAAAGTAACCTCTCTCCCATTTTCCTTTTATA	cjb111_al2.seq
8302	GATAACTATCTAAGGGAAACAAAAGTAACCTCTCTCCCATTTTCCTTTTATA	h36b_al2.seq
	TCCTCGGGCTTATCAGTAAGTAGAAAAATTACTTTTATTTAGATATCCATT	Majority
	8460 8470 8480 8490 8500	
8402	TCCTCGGGCTTATCAGTAAGTAGAAAAATTACTTTTATTTAGATATCCATT	2603_al2.seq
8402	TCCTCGGGCTTATCAGTAAGTAGAAAAATTACTTTTATTTAGATATCCATT	18rs21_al2.seq
8310	TCCTCGGGCTTATCAGTAAGTAGAAAAATTACTTTTATTTAGATATCCATT	515_al2.seq
8299	TCCTCGGGCTTATCAGTAAGTAGAAAAATTACTTTTATTTAGATATCCATT	cjb111_al2.seq
8352	TCCTCGGGCTTATCAGTAAGTAGAAAAATTACTTTTATTTAGATATCCATT	h36b_al2.seq
	TTTTTTCATTTGTTCAAAATTGGCTTTTCATATGATGCCACCCAGTTTAAAA	Majority
	8510 8520 8530 8540 8550	
8452	TTTTTTCATTTGTTCAAAATTGGCTTTTCATATGATGCCACCCAGTTTAAAA	2603_al2.seq
8452	TTTTTTCATTTGTTCAAAATTGGCTTTTCATATGATGCCACCCAGTTTAAAA	18rs21_al2.seq
8360	TTTTTTCATTTGTTCAAAATTGGCTTTTCATATGATGCCACCCAGTTTAAAA	515_al2.seq
8349	TTTTTTCATTTGTTCAAAATTGGCTTTTCATATGATGCCACCCAGTTTAAAA	cjb111_al2.seq
8402	TTTTTTCATTTGTTCAAAATTGGCTTTTCATATGATGCCACCCAGTTTAAAA	h36b_al2.seq

FIGURE 19R

75/487

T A T T A A T A G C A T A T G A T C T C G T A G G A A C A C C A T C A G T T A C A T G A A C A A T A Majority									
8560		8570		8580		8590		8600	
8502	T A T T A A T A G C A T A T G A T C T C G T A G G A A C A C C A T C A G T T A C A T G A A C A A T A 2603_al2.seq								
8502	T A T T A A T A G C A T A T G A T C T C G T A G G A A C A C C A T C A G T T A C A T G A A C A A T A 18rs21_al2.seq								
8410	T A T T A A T A G C A T A T G A T C T C G T A G G A A C A C C A T C A G T T A C A T G A A C A A T A 515_al2.seq								
8399	T A T T A A T A G C A T A T G A T C T C G T A G G A A C A C C A T C A G T T A C A T G A A C A A T A cjb111_al2.seq								
8452	T A T T A A T A G C A T A T G A T C T C G T A G G A A C A C C A T C A G T T A C A T G A A C A A T A h36b_al2.seq								
A T T T T T T G A C T A T T T C G A T T T A C T T G A C T C A A A A T A T C A T C T G C C T C C A T Majority									
8610		8620		8630		8640		8650	
8552	A T T T T T T G A C T A T T T C G A T T T A C T T G A C T C A A A A T A T C A T C T G C C T C C A T 2603_al2.seq								
8552	A T T T T T T G A C T A T T T C G A T T T A C T T G A C T C A A A A T A T C A T C T G C C T C C A T 18rs21_al2.seq								
8460	A T T T T T T G A C T A T T T C G A T T T A C T T G A C T C A A A A T A T C A T C T G C C T C C A T 515_al2.seq								
8449	A T T T T T T G A C T A T T T C G A T T T A C T T G A C T C A A A A T A T C A T C T G C C T C C A T cjb111_al2.seq								
8502	A T T T T T T G A C T A T T T C G A T T T A C T T G A C T C A A A A T A T C A T C T G C C T C C A T h36b_al2.seq								
G A A G G C T T T C A T A G T A A A T G T T T C T C C T A C T T T A C T A A G A T A G T A C T C C T Majority									
8660		8670		8680		8690		8700	
8602	G A A G G C T T T C A T A G T A A A T G T T T C T C C T A C T T T A C T A A G A T A G T A C T C C T 2603_al2.seq								
8602	G A A G G C T T T C A T A G T A A A T G T T T C T C C T A C T T T A C T A A G A T A G T A C T C C T 18rs21_al2.seq								
8510	G A A G G C T T T C A T A G T A A A T G T T T C T C C T A C T T T A C T A A G A T A G T A C T C C T 515_al2.seq								
8499	G A A G G C T T T C A T A G T A A A T G T T T C T C C T A C T T T A C T A A G A T A G T A C T C C T cjb111_al2.seq								
8552	G A A G G C T T T C A T A G T A A A T G T T T C T C C T A C T T T A C T A A G A T A G T A C T C C T h36b_al2.seq								
T T T G T T G C T C T G G A G T T A A T C C A T T G G T A G T A G A T C C C C A C T T A G C T T T A Majority									
8710		8720		8730		8740		8750	
8652	T T T G T T G C T C T G G A G T T A A T C C A T T G G T A G T A G A T C C C C A C T T A G C T T T A 2603_al2.seq								
8652	T T T G T T G C T C T G G A G T T A A T C C A T T G G T A G T A G A T C C C C A C T T A G C T T T A 18rs21_al2.seq								
8560	T T T G T T G C T C T G G A G T T A A T C C A T T G G T A G T A G A T C C C C A C T T A G C T T T A 515_al2.seq								
8549	T T T G T T G C T C T G G A G T T A A T C C A T T G G T A G T A G A T C C C C A C T T A G C T T T A cjb111_al2.seq								
8602	T T T G T T G C T C T G G A G T T A A T C C A T T G G T A G T A G A T C C C C A C T T A G C T T T A h36b_al2.seq								
G G A G C T T C T C T C G G A A T C C T T T T T A T A A T C T C T T C A G C A T T A T T T G T T A A Majority									
8760		8770		8780		8790		8800	
8702	G G A G C T T C T C T C G G A A T C C T T T T T A T A A T C T C T T C A G C A T T A T T T G T T A A 2603_al2.seq								
8702	G G A G C T T C T C T C G G A A T C C T T T T T A T A A T C T C T T C A G C A T T A T T T G T T A A 18rs21_al2.seq								
8610	G G A G C T T C T C T C G G A A T C C T T T T T A T A A T C T C T T C A G C A T T A T T T G T T A A 515_al2.seq								
8599	G G A G C T T C T C T C G G A A T C C T T T T T A T A A T C T C T T C A G C A T T A T T T G T T A A cjb111_al2.seq								
8652	G G A G C T T C T C T C G G A A T C C T T T T T A T A A T C T C T T C A G C A T T A T T T G T T A A h36b_al2.seq								
T T G T T T A T G A C T A T A A T T C T C T G T C T G A A T T G T G A A C T T A G T T T G A A G G C Majority									
8810		8820		8830		8840		8850	
8752	T T G T T T A T G A C T A T A A T T C T C T G T C T G A A T T G T G A A C T T A G T T T G A A G G C 2603_al2.seq								
8752	T T G T T T A T G A C T A T A A T T C T C T G T C T G A A T T G T G A A C T T A G T T T G A A G G C 18rs21_al2.seq								
8660	T T G T T T A T G A C T A T A A T T C T C T G T C T G A A T T G T G A A C T T A G T T T G A A G G C 515_al2.seq								
8649	T T G T T T A T G A C T A T A A T T C T C T G T C T G A A T T G T G A A C T T A G T T T G A A G G C cjb111_al2.seq								
8702	T T G T T T A T G A C T A T A A T T C T C T G T C T G A A T T G T G A A C T T A G T T T G A A G G C h36b_al2.seq								
C A T A A T A T T T A T C A T C T T C T T T A A A T C C T T T T A C G A C A T C T A C A C T C C T A Majority									
8860		8870		8880		8890		8900	
8802	C A T A A T A T T T A T C A T C T T C T T T A A A T C C T T T T A C G A C A T C T A C A C T C C T A 2603_al2.seq								
8802	C A T A A T A T T T A T C A T C T T C T T T A A A T C C T T T T A C G A C A T C T A C A C T C C T A 18rs21_al2.seq								
8710	C A T A A T A T T T A T C A T C T T C T T T A A A T C C T T T T A C G A C A T C T A C A C T C C T A 515_al2.seq								
8699	C A T A A T A T T T A T C A T C T T C T T T A A A T C C T T T T A C G A C A T C T A C A C T C C T A cjb111_al2.seq								
8752	C A T A A T A T T T A T C A T C T T C T T T A A A T C C T T T T A C G A C A T C T A C A C T C C T A h36b_al2.seq								
C C A T C A A A A A T A T C T G A A C C A T A G G T A A C T A A T G C A A C C C T A T T A T C A C T Majority									
8910		8920		8930		8940		8950	
8852	C C A T C A A A A A T A T C T G A A C C A T A G G T A A C T A A T G C A A C C C T A T T A T C A C T 2603_al2.seq								
8852	C C A T C A A A A A T A T C T G A A C C A T A G G T A A C T A A T G C A A C C C T A T T A T C A C T 18rs21_al2.seq								
8760	C C A T C A A A A A T A T C T G A A C C A T A G G T A A C T A A T G C A A C C C T A T T A T C A C T 515_al2.seq								
8749	C C A T C A A A A A T A T C T G A A C C A T A G G T A A C T A A T G C A A C C C T A T T A T C A C T cjb111_al2.seq								
8799	C C A T C A A A A A T A T C T G A A C C A T A G G T A A C T A A T G C A A C C C T A T T A T C A C T h36b_al2.seq								
G T T T G C T C C T A A A A T A T C T T T T A C T G C G G T C C C A A G A G C T T C G G C A G C T T Majority									
8960		8970		8980		8990		9000	
8902	G T T T G C T C C T A A A A T A T C T T T T A C T G C G G T C C C A A G A G C T T C G G C A G C T T 2603_al2.seq								
8902	G T T T G C T C C T A A A A T A T C T T T T A C T G C G G T C C C A A G A G C T T C G G C A G C T T 18rs21_al2.seq								
8810	G T T T G C T C C T A A A A T A T C T T T T A C T G C G G T C C C A A G A G C T T C G G C A G C T T 515_al2.seq								
8799	G T T T G C T C C T A A A A T A T C T T T T A C T G C G G T C C C A A G A G C T T C G G C A G C T T cjb111_al2.seq								
8849	G T T T G C T C C T A A A A T A T C T T T T A C T G C G G T C C C A A G A G C T T C G G C A G C T T h36b_al2.seq								

FIGURE 19S

76/487

T C T T G C C T T T A T T A T G C C T T T G A A A T T T G G G C C A T C G T T A T T C A T T G A G Majority									
9010		9020		9030		9040		9050	
8952	T	C	T	T	G	C	C	T	T
8952	T	C	T	T	G	C	C	T	T
8860	T	C	T	T	G	C	C	T	T
8849	T	C	T	T	G	C	C	T	T
8899	T	C	T	T	G	C	C	T	T
T T A G A A T T A T C G A G T A C G A A G A C A A C A T C T A A C G G C T T T T G T T T G T C C A C Majority									
9060		9070		9080		9090		9100	
9002	T	T	A	G	A	A	T	T	A
9002	T	T	A	G	A	A	T	T	A
8910	T	T	A	G	A	A	T	T	A
8899	T	T	A	G	A	A	T	T	A
8937	T	T	A	G	A	A	T	T	A
T G C T T T T A C T A T G G T T T T T C C A C T G A C A G T T A A C T C A A T T T T A T A T T T A T Majority									
9110		9120		9130		9140		9150	
9052	T	G	C	T	T	T	A	C	T
9052	T	G	C	T	T	T	A	C	T
8960	T	G	C	T	T	T	A	C	T
8949	T	G	C	T	T	T	A	C	T
8987	T	G	C	T	T	T	A	C	T
T A T G A G C T A A A T C A C C T A C T T C T G A A A T A C G T T T A G A T A A T G T T C C C T C T Majority									
9160		9170		9180		9190		9200	
9102	T	A	T	G	A	G	C	T	A
9102	T	A	T	G	A	G	C	T	A
9010	T	A	T	G	A	G	C	T	A
8999	T	A	T	G	A	G	C	T	A
9037	T	A	T	G	A	G	C	T	A
G G A A T T T C T C T T A T A T G C T C A C C T T C A C T T G A A T A T G G G T T A A C T G C T T T Majority									
9210		9220		9230		9240		9250	
9152	G	G	A	A	T	T	C	T	C
9152	G	G	A	A	T	T	C	T	C
9060	G	G	A	A	T	T	C	T	C
9049	G	G	A	A	T	T	C	T	C
9087	G	G	A	A	T	T	C	T	C
T G C C T C T G A C T T T C C A T T T G G A A C T G A A C C T T T A A C A T G C T C A A G T T T A T Majority									
9260		9270		9280		9290		9300	
9202	T	G	C	C	T	C	T	G	A
9202	T	G	C	C	T	C	T	G	A
9110	T	G	C	C	T	C	T	G	A
9099	T	G	C	C	T	C	T	G	A
9137	T	G	C	C	T	C	T	G	A
A A G A T T C C T T T G T A T C T T C A T A A A T T C C T G T G G G G G A T A C T G C T T A T C T Majority									
9310		9320		9330		9340		9350	
9252	A	A	G	A	T	T	C	C	T
9252	A	A	G	A	T	T	C	C	T
9160	A	A	G	A	T	T	C	C	T
9149	A	A	G	A	T	T	C	C	T
9187	A	A	G	A	T	T	C	C	T
A G T T C T T C C T G A T T T T G T C C A A T T G T G G A A T T T T T A T C A C C A C T A T T T T G Majority									
9360		9370		9380		9390		9400	
9302	A	G	T	T	C	T	T	C	T
9302	A	G	T	T	C	T	T	C	T
9210	A	G	T	T	C	T	T	C	T
9199	A	G	T	T	C	T	T	C	T
9237	A	G	T	T	C	T	T	C	T
T A T C G T A G T T T T T C C A T T A C T C T C A A C C T T A A C T T G C C A A G T C T G G T T A G Majority									
9410		9420		9430		9440		9450	
9352	T	A	T	C	G	T	A	G	T
9352	T	A	T	C	G	T	A	G	T
9260	T	A	T	C	G	T	A	G	T
9249	T	A	T	C	G	T	A	G	T
9287	T	A	T	C	G	T	A	G	T

FIGURE 19T

FIGURE 19U.

78/487

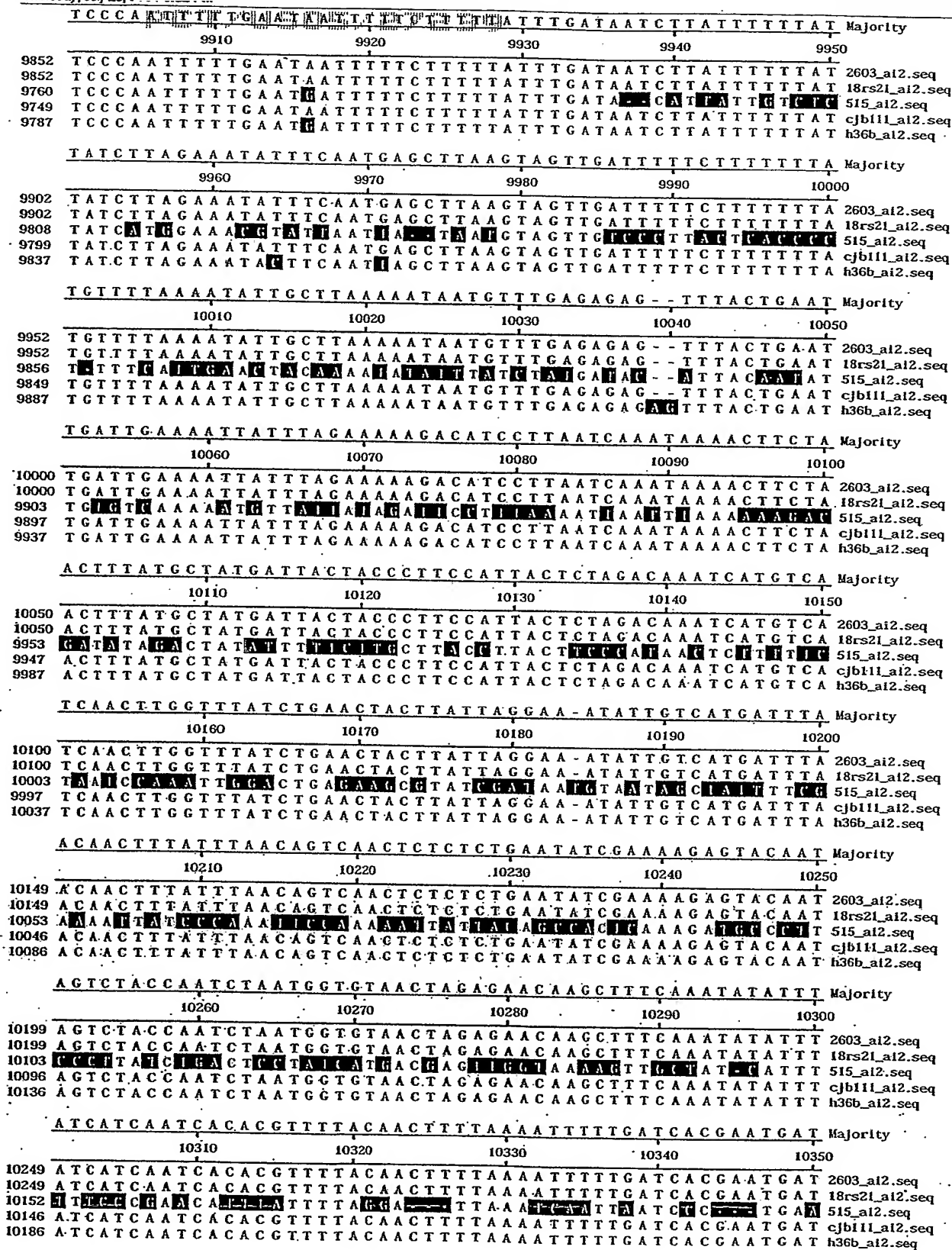


FIGURE 19V

FIGURE 19W

FIGURE 19X

8/1487

ATACAGAGTATAGCCCTACTAACTACAGAGCTTTTATTAATAACCAAATTTTA Majority
11260 11270 11280 11290 11300

11174 ATACAGAGTATAGCCCTACTAACTACAGAGCTTTTATTAATAACCAAATTTTA 2603_a12.seq
11175 ATACAGAGTATAGCCCTACTAACTACAGAGCTTTTATTAATAACCAAATTTTA 18rs21_a12.seq
11086 ATACAGAGTATAGCCCTACTAACTACAGAGCTTTTATTAATAACCAAATTTTA 515_a12.seq
11072 ATACAGAGTATAGCCCTACTAACTACAGAGCTTTTATTAATAACCAAATTTTA cjb111_a12.seq
11112 ATACAGAGTATAGCCCTACTAACTACAGAGCTTTTATTAATAACCAAATTTTA h36b_a12.seq

ACAGAAATGCTTATTACAGAGATTTTCTTCTAAAAAGATTTCATTTCCACCC Majority
11310 11320 11330 11340 11350

11222 ACAGAAATGCTTATTACAGAGATTTTCTTCTAAAAAGATTTCATTTCCACCC 2603_a12.seq
11223 ACAGAAATGCTTATTACAGAGATTTTCTTCTAAAAAGATTTCATTTCCACCC 18rs21_a12.seq
11136 ACAGAAATGCTTATTACAGAGATTTTCTTCTAAAAAGATTTCATTTCCACCC 515_a12.seq
11120 ACAGAAATGCTTATTACAGAGATTTTCTTCTAAAAAGATTTCATTTCCACCC cjb111_a12.seq
11160 ACAGAAATGCTTATTACAGAGATTTTCTTCTAAAAAGATTTCATTTCCACCC h36b_a12.seq

TTACTATTTTATTAACCTGATGATCTTTTCCAATATTACTAATCTTAATCCAG Majority
11360 11370 11380 11390 11400

11272 TTACTATTTTATTAACCTGATGATCTTTTCCAATATTACTAATCTTAATCCAG 2603_a12.seq
11273 TTACTATTTTATTAACCTGATGATCTTTTCCAATATTACTAATCTTAATCCAG 18rs21_a12.seq
11181 TTACTATTTTATTAACCTGATGATCTTTTCCAATATTACTAATCTTAATCCAG 515_a12.seq
11170 TTACTATTTTATTAACCTGATGATCTTTTCCAATATTACTAATCTTAATCCAG cjb111_a12.seq
11210 TTACTATTTTATTAACCTGATGATCTTTTCCAATATTACTAATCTTAATCCAG h36b_a12.seq

ACATTATTTATTAACCAATAAAAAAGCTTTTCTCCCTTTATCAAAACATGAGATT Majority
11410 11420 11430 11440 11450

11322 ACATTATTTATTAACCAATAAAAAAGCTTTTCTCCCTTTATCAAAACATGAGATT 2603_a12.seq
11323 ACATTATTTATTAACCAATAAAAAAGCTTTTCTCCCTTTATCAAAACATGAGATT 18rs21_a12.seq
11227 ACATTATTTATTAACCAATAAAAAAGCTTTTCTCCCTTTATCAAAACATGAGATT 515_a12.seq
11220 ACATTATTTATTAACCAATAAAAAAGCTTTTCTCCCTTTATCAAAACATGAGATT cjb111_a12.seq
11260 ACATTATTTATTAACCAATAAAAAAGCTTTTCTCCCTTTATCAAAACATGAGATT h36b_a12.seq

TCTTCAGAGAGTTTAATTACATATATTGATCTGATTAAATACTTCAGACCA Majority
11460 11470 11480 11490 11500

11372 TCTTCAGAGAGTTTAATTACATATATTGATCTGATTAAATACTTCAGACCA 2603_a12.seq
11373 TCTTCAGAGAGTTTAATTACATATATTGATCTGATTAAATACTTCAGACCA 18rs21_a12.seq
11269 TCTTCAGAGAGTTTAATTACATATATTGATCTGATTAAATACTTCAGACCA 515_a12.seq
11270 TCTTCAGAGAGTTTAATTACATATATTGATCTGATTAAATACTTCAGACCA cjb111_a12.seq
11310 TCTTCAGAGAGTTTAATTACATATATTGATCTGATTAAATACTTCAGACCA h36b_a12.seq

AATCAATCAAAATCCAAAAAATTATTTTCATCAATACAGGAAGAAAAATATT Majority
11510 11520 11530 11540 11550

11422 AATCAATCAAAATCCAAAAAATTATTTTCATCAATACAGGAAGAAAAATATT 2603_a12.seq
11423 AATCAATCAAAATCCAAAAAATTATTTTCATCAATACAGGAAGAAAAATATT 18rs21_a12.seq
11319 AATCAATCAAAATCCAAAAAATTATTTTCATCAATACAGGAAGAAAAATATT 515_a12.seq
11320 AATCAATCAAAATCCAAAAAATTATTTTCATCAATACAGGAAGAAAAATATT cjb111_a12.seq
11360 AATCAATCAAAATCCAAAAAATTATTTTCATCAATACAGGAAGAAAAATATT h36b_a12.seq

GCAAACTTTTTTGCAAAAACTAATGAAATAACTAATCGTAGCTCCT - - - - Majority
11560 11570 11580 11590 11600

11472 GCAAACTTTTTTGCAAAAACTAATGAAATAACTAATCGTAGCTCCT - - - - 2603_a12.seq
11473 GCAAACTTTTTTGCAAAAACTAATGAAATAACTAATCGTAGCTCCT - - - - 18rs21_a12.seq
11369 GCAAACTTTTTTGCAAAAACTAATGAAATAACTAATCGTAGCTCCT - - - - 515_a12.seq
11370 GCAAACTTTTTTGCAAAAACTAATGAAATAACTAATCGTAGCTCCT - - - - cjb111_a12.seq
11410 GCAAACTTTTTTGCAAAAACTAATGAAATAACTAATCGTAGCTCCT - - - - h36b_a12.seq

ATAACTCTTAAAAAATTAAACATTAAAAAGCT - AGAGCATTGTGTAATGCTC Majority
11610 11620 11630 11640 11650

11517 ATAACTCTTAAAAAATTAAACATTAAAAAGCT - AGAGCATTGTGTAATGCTC 2603_a12.seq
11518 ATAACTCTTAAAAAATTAAACATTAAAAAGCT - AGAGCATTGTGTAATGCTC 18rs21_a12.seq
11419 ATAACTCTTAAAAAATTAAACATTAAAAAGCT - AGAGCATTGTGTAATGCTC 515_a12.seq
11415 ATAACTCTTAAAAAATTAAACATTAAAAAGCT - AGAGCATTGTGTAATGCTC cjb111_a12.seq
11455 ATAACTCTTAAAAAATTAAACATTAAAAAGCT - AGAGCATTGTGTAATGCTC h36b_a12.seq

TAGCTTTTTTAATGTTAATTTTTTTTGAATAATATAATCCAACCTTTTCAACT Majority
11660 11670 11680 11690 11700

11566 TAGCTTTTTTAATGTTAATTTTTTTTGAATAATATAATCCAACCTTTTCAACT 2603_a12.seq
11567 TAGCTTTTTTAATGTTAATTTTTTTTGAATAATATAATCCAACCTTTTCAACT 18rs21_a12.seq
11466 TAGCTTTTTTAATGTTAATTTTTTTTGAATAATATAATCCAACCTTTTCAACT 515_a12.seq
11464 TAGCTTTTTTAATGTTAATTTTTTTTGAATAATATAATCCAACCTTTTCAACT cjb111_a12.seq
11504 TAGCTTTTTTAATGTTAATTTTTTTTGAATAATATAATCCAACCTTTTCAACT h36b_a12.seq

FIGURE 19Y

FIGURE 19Z

FIGURE 19AA

84/487

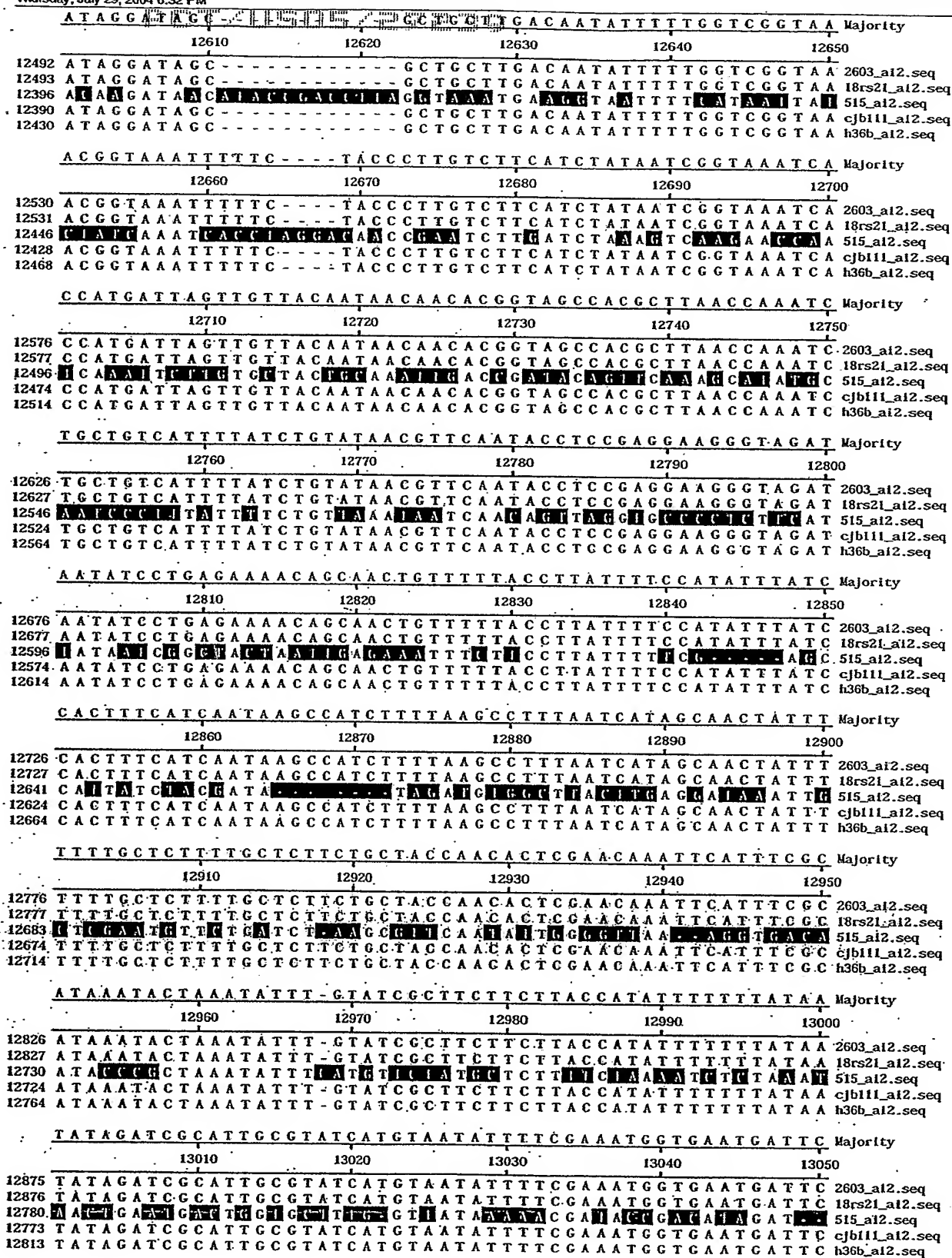


FIGURE 19AB

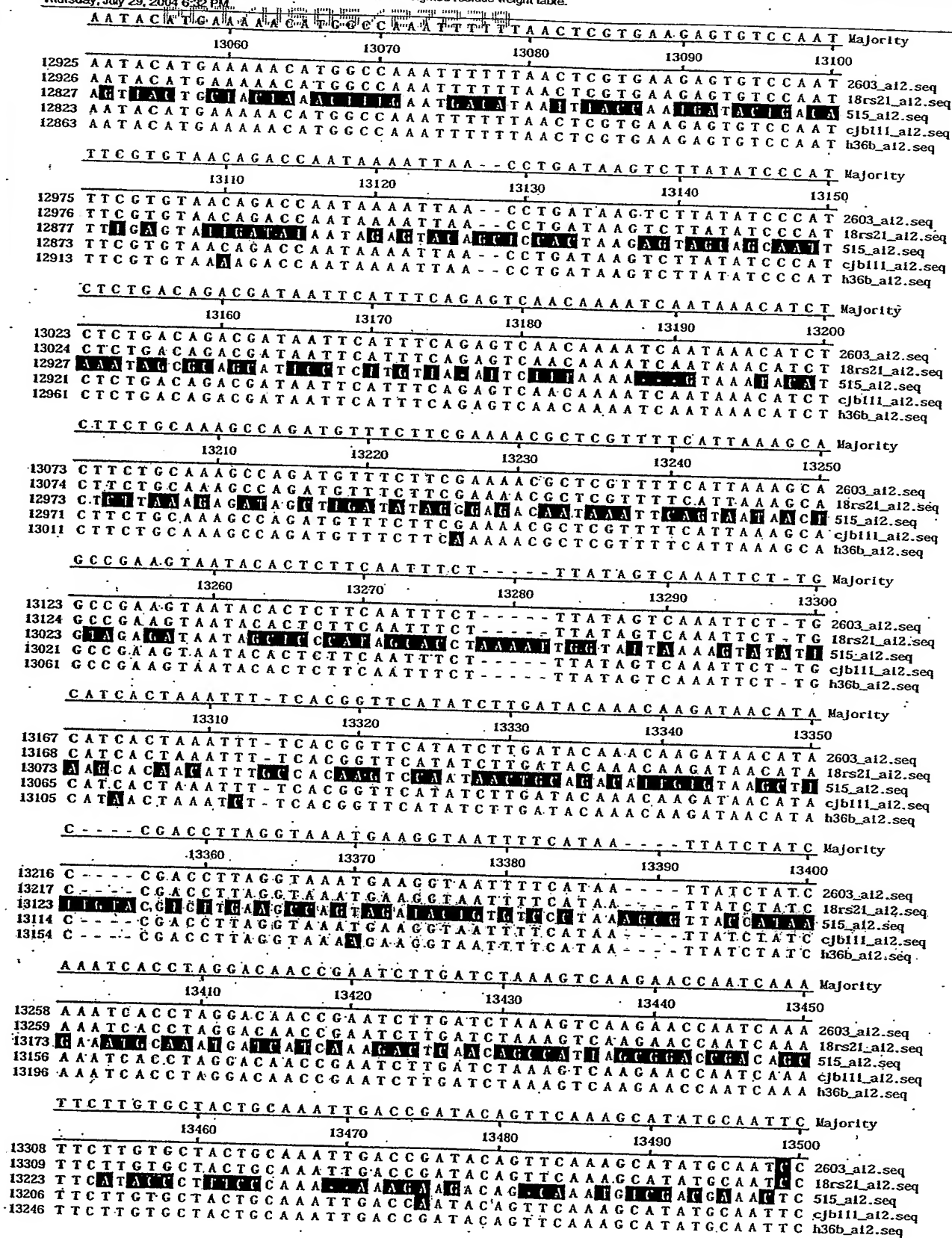


FIGURE 19AC

FIGURE 19AD



88/487

		G T T G C T T C A T A A G T T G T C T G A A G C C T A A T T C T A A A G T C A C A T G C A T T C T	Majority
		10 20 30 40 50	
1		G	2603_ai2.seq
1		G T T G C T T C A T A A G T T G T C T G A A G C C T A A T T C T A A A G T C A C A T G C A T T C T	nem316_ai2.seq
		T T C A G A A A G T T C A G C G A G A T A G T A T A T A G T T T C A T C A G G T A A G C A A T C C G	Majority
		60 70 80 90 100	
2		T T C A G A A A G T T C A G C G A G A T A G T A T A T A G T T T C A T C A G G T A A G C A A T C C G	2603_ai2.seq
51		T T C A G A A A G T T C A G C G A G A T A G T A T A T A G T T T C A T C A G G T A A G C A A T C C G	nem316_ai2.seq
		G C C T T G T T C C G A T C T T G A T T C C G A T A A C T C C T G G C T C A T T A A T A G C C T G T	Majority
		110 120 130 140 150	
2		G C C T T G T T C C G A T C T T G A T T C C G A T A A C T C C T G G C T C A T T A A T A G C C T G T	2603_ai2.seq
101		G C C T T G T T C C G A T C T T G A T T C C G A T A A C T C C T G G C T C A T T A A T A G C C T G T	nem316_ai2.seq
		T C G T A A C G C T G T T T A A T T A T C T C T A A C T T A G C A T G G G T A T T G G T A A A A T T	Majority
		160 170 180 190 200	
52		T C G T A A C G C T G T T T A A T T A T C T C T A A C T T A G C A T G G G T A T T G G T A A A A T T	2603_ai2.seq
151		T C G T A A C G C T G T T T A A T T A T C T C T A A C T T A G C A T G G G T A T T G G T A A A A T T	nem316_ai2.seq
		T T C A A A A T A G A C T A A G T A T T T A T T A A C C T C G G G C C A C T T T C T A T G C A T G A	Majority
		210 220 230 240 250	
102		T T G A A A A T A G A C T A A G T A T T T A T T A A C C T C A G G C C A C T T T C T A T G C A T G A	2603_ai2.seq
201		T T G A A A A T A G A C T A A G T A T T T A T T A A C C T C G G G C C A C T T T C T A T G C A T G A	nem316_ai2.seq
		A A T C A A T T T C T T T A T A G A A T T G T T C A C G A A T A G G A G C T T C T G G A G C A A C T	Majority
		260 270 280 290 300	
152		A A T C A A T T T C T T T A T A G A A T T G T T C A C G A A T A G G A G C T T C T G G A G C A A C T	2603_ai2.seq
251		A A T C A A T T T C T T T A T A G A A T T G T T C A C G A A T A G G A G C T T C T G G A G C A A C T	nem316_ai2.seq
		A T A G C A T C C C C T G A A C C A G A A A C T G T G C A A A A A G T G C A T C C T C C T C T A G C	Majority
		310 320 330 340 350	
202		A T A G C A T C C C C T G A A C C A G A A A C T G T G C A A A A A G T G C A T C C T C C T C T A G C	2603_ai2.seq
301		A T A G C A T C C C C T G A A C C A G A A A C T G T G C A A A A A G T G C A T C C T C C T C T A G C	nem316_ai2.seq
		A A C T G T T C C G T C T C T G T T A G G A C A G T C A A A A C C A G C A T C T A T A G G T A A T T	Majority
		360 370 380 390 400	
252		A A C T G T T C C G T C T C T G T T A G G A C A G T C A A A A C C A G C A T C T A T A G G T A A T T	2603_ai2.seq
351		A A C T G T T C C G T C T C T G T T A G G A C A G T C A A A A C C A G C A T C T A T A G G T A A T T	nem316_ai2.seq
		T A A A T A T T T T T C T C C A A A G A G T T C T C G A T A A T A A T C A T T A A T C G C A C G A	Majority
		410 420 430 440 450	
302		T A A A T A T T T T T C T C C A A A G A G T T C T C G A T A A T A A T C A T T A A T C G C A C G A	2603_ai2.seq
401		T A A A T A T T T T T C T C C A A A G A G T T C T C G A T A A T A A T C A T T A A T C G C A C G A	nem316_ai2.seq
		T A A C G T T T T T T C A T A G G A T A A T T G T A T C A C A A T T T T A A C T A A A A T A A C C T	Majority
		460 470 480 490 500	
352		T A A C G T T T T T T C A T A G G A T A A T T G T A T C A C A A T T T T A A C T A A A A T A A C C T	2603_ai2.seq
451		T A A C G T T T T T T C A T A G G A T A A T T G T A T C A C A A T T T T A A C T A A A A T A A C C T	nem316_ai2.seq
		C A C T A C T A C A A T A A A A C T T A A A A A G A T T G G A A C G T C A G T T A G T C C G A A T C	Majority
		510 520 530 540 550	
402		C A C T A C T A C A A T A A A A C T T A A A A A G A T T G G A A C G T C A G T T A G T C C G A A T C	2603_ai2.seq
501		C A C T A C T A C A A T A A A A C T T A A A A A G A T T G G A A C G T C A G T T A G T C C G A A T C	nem316_ai2.seq
		T T T T A T T T A C T T C A C T T T C T T T A A C C A A T C C T T G G C T A A A A A G A T A T A C G	Majority
		560 570 580 590 600	
452		T T T T A T T T A C T T C A C T T T C T T T A A C C A A T C C T T G G C T A A A A A G A T A T A C G	2603_ai2.seq
551		T T T T A T T T A C T T C A C T T T C T T T A A C C A A T C C T T G G C T A A A A A G A T A T A C G	nem316_ai2.seq
		C A G T T A G A T T C A A A A T A C C A T A A G C A A G T A T A A A A C C A G C T A A A A C A T C T	Majority
		610 620 630 640 650	
502		C A G T T A G A T T C A A A A T A C C A T A A G C A A G T A T A A A A C C A G C T A A A A C A T C T	2603_ai2.seq
601		C A G T T A G A T T C A A A A T A C C A T A A G C A A G T A T A A A A C C A G C T A A A A C A T C T	nem316_ai2.seq

Figure 20

89/487

	GTCTGGGAAATGCAACCCCTAGGTAATAACGAGATAACCCCAATTAAAAAAAT	Majority
552	GTCTGGGAAATGCAACCCCTAGGTAATAACGAGATAACCCCAATTAAAAAAAT	2603_a12.seq
651	GTCTGGGAAATGCAACCCCTAGGTAATAACGAGATAACCCCAATTAAAAAAAT	nem316_a12.seq
	GAGCAAACCCCAAAGTACCTTTGGCACAACAGTTTCCATATACTCTTAGGCCA	Majority
602	GAGCAAACCCCAAAGTACCTTTGGCACAACAGTTTCCATATACTCTTAGGCCA	2603_a12.seq
701	GAGCAAACCCCAAAGTACCTTTGGCACAACAGTTTCCATATACTCTTAGGCCA	nem316_a12.seq
	TATAGTACTGCAATAAAAAATAATAACTCCCAAATATCATAAATGTTCCC	Majority
652	TATAGTACTGCAATAAAAAATAATAACTCCCAAATATCATAAATGTTCCC	2603_a12.seq
751	TATAGTACTGCAATAAAAAATAATAACTCCCAAATATCATAAATGTTCCC	nem316_a12.seq
	ATCGAGTGGCCACTGGGAAACGAATAGCCACCTGCAAATACTAAATGGGT	Majority
702	ATCGAGTGGCCACTGGGAAACGAATAGCCACCTGCAAATACTAAATGGGT	2603_a12.seq
801	ATCGAGTGGCCACTGGGAAACGAATAGCCACCTGCAAATACTAAATGGGT	nem316_a12.seq
	TAAAGTTGGTCTTACTCTTTGAAAAATAAGTTTAAAGAAAGTATACATA	Majority
752	TAAAGTTGGTCTTACTCTTTGAAAAATAAGTTTAAAGAAAGTATACATA	2603_a12.seq
851	TAAAGTTGGTCTTACTCTTTGAAAAATAAGTTTAAAGAAAGTATACATA	nem316_a12.seq
	TACCAGAGATAATAGCATTCTACTGCGATAAATCTAGCTTGAGGATACCAAC	Majority
802	TACCAGAGATAATAGCATTCTACTGCGATAAATCTAGCTTGAGGATACCAAC	2603_a12.seq
901	TACCAGAGATAATAGCATTCTACTGCGATAAATCTAGCTTGAGGATACCAAC	nem316_a12.seq
	TTCTTAAGGTAACAGAAAGTGACGCTCATAATCGCAATAGCTATCTGGCT	Majority
852	TTCTTAAGGTAACAGAAAGTGACGCTCATAATCGCAATAGCTATCTGGCT	2603_a12.seq
951	TTCTTAAGGTAACAGAAAGTGACGCTCATAATCGCAATAGCTATCTGGCT	nem316_a12.seq
	TACAGTATTACCAATCACAGTGATTAACCTTGAAAATCTTGTAGAAAGAT	Majority
902	TACAGTATTACCAATCACAGTGATTAACCTTGAAAATCTTGTAGAAAGAT	2603_a12.seq
1001	TACAGTATTACCAATCACAGTGATTAACCTTGAAAATCTTGTAGAAAGAT	nem316_a12.seq
	TTGGCAACTGTCTCTTAACACTTTCTTTGAATGTTTTGGTCAAATGCAATT	Majority
952	TTGGCAACTGTCTCTTAACACTTTCTTTGAATGTTTTGGTCAAATGCAATT	2603_a12.seq
1051	TTGGCAACTGTCTCTTAACACTTTCTTTGAATGTTTTGGTCAAATGCAATT	nem316_a12.seq
	ACAGTGTGCGGGCCCAATATTTGATGACCAATCCTAAACTGAAAAATAAGAT	Majority
1002	ACAGTGTGCGGGCCCAATATTTGATGACCAATCCTAAACTGAAAAATAAGAT	2603_a12.seq
1101	ACAGTGTGCGGGCCCAATATTTGATGACCAATCCTAAACTGAAAAATAAGAT	nem316_a12.seq
	AATAGCAATAAATGCTTGAATAAGTTTACTATTTTGACGAGATAACATTA	Majority
1052	AATAGCAATAAATGCTTGAATAAGTTTACTATTTTGACGAGATAACATTA	2603_a12.seq
1151	AATAGCAATAAATGCTTGAATAAGTTTACTATTTTGACGAGATAACATTA	nem316_a12.seq
	GTCTTTTTTATATCTTTCTAATATTGGCAAACAAGCCACGTAAGTTAGATA	Majority
1102	GTCTTTTTTATATCTTTCTAATATTGGCAAACAAGCCACGTAAGTTAGATA	2603_a12.seq
1201	GTCTTTTTTATATCTTTCTAATATTGGCAAACAAGCCACGTAAGTTAGATA	nem316_a12.seq
	GAAAAACAATCGAAATTAAAAATTCCCTCAACGATATTAAATGGAATAACCA	Majority
1152	GAAAAACAATCGAAATTAAAAATTCCCTCAACGATATTAAATGGAATAACCA	2603_a12.seq
1251	GAAAAACAATCGAAATTAAAAATTCCCTCAACGATATTAAATGGAATAACCA	nem316_a12.seq

FIGURE 20A

90/487

		TTGTTTAAAGGCTAATTGCTTACACCAATAAATGTTCTGATATCAAAGTTA	Majority
		1310 1320 1330 1340 1350	
1202		TTGTTTAAAGGCTAATTGCTTACACCAATAAATGTTCTGATATCAAAGTTA	2603_al2.seq
1301		TTGTTTAAAGGCTAATTGCTTACACCAATAAATGTTCTGATATCAAAGTTA	nem316_al2.seq
		GCAAATATAGCATACAAAGGAATCGCAAAGACATAGTTGAGAGCTACCAT	Majority
		1360 1370 1380 1390 1400	
1252		GCAAATATAGCATACAAAGGAATCGCAAAGACATAGTTGAGAGCTACCAT	2603_al2.seq
1351		GCAAATATAGCATACAAAGGAATCGCAAAGACATAGTTGAGAGCTACCAT	nem316_al2.seq
		AGATACGGTCAAGCTAACTGTACCAATAGACTAGCTTTAATAAAATCTT	Majority
		1410 1420 1430 1440 1450	
1302		AGATACGGTCAAGCTAACTGTACCAATAGACTAGCTTTAATAAAATCTT	2603_al2.seq
1401		AGATACGGTCAAGCTAACTGTACCAATAGACTAGCTTTAATAAAATCTT	nem316_al2.seq
		TTGCACTCTCTCTATTTTTTCCAGAAAATAGCGAAACTTCTTAAAAATAAA	Majority
		1460 1470 1480 1490 1500	
1352		TTGCACTCTCTCTATTTTTTCCAGAAAATAGCGAAACTTCTTAAAAATAAA	2603_al2.seq
1451		TTGCACTCTCTCTATTTTTTCCAGAAAATAGCGAAACTTCTTAAAAATAAA	nem316_al2.seq
		GCTAGAGCAACCATATTCATCGGTAAACCGATAAAGGTTTCTGGACCACG	Majority
		1510 1520 1530 1540 1550	
1402		GCTAGAGCAACCATATTCATCGGTAAACCGATAAAGGTTTCTGGACCACG	2603_al2.seq
1501		GCTAGAGCAACCATATTCATCGGTAAACCGATAAAGGTTTCTGGACCACG	nem316_al2.seq
		ATTAGCAAGTATAAAGTTTAAAGTGTCTTAATAAGAGTACACCATAAC	Majority
		1560 1570 1580 1590 1600	
1452		ATTAGCAAGTATAAAGTTTAAAGTGTCTTAATAAGAGTACACCATAAC	2603_al2.seq
1551		ATTAGCAAGTATAAAGTTTAAAGTGTCTTAATAAGAGTACACCATAAC	nem316_al2.seq
		TTGATTTTCAAATCAAATAAAATAAAGCAACTAACATCGGAAGGATTGAA	Majority
		1610 1620 1630 1640 1650	
1502		TTGATTTTCAAATCAAATAAAATAAAGCAACTAACATCGGAAGGATTGAA	2603_al2.seq
1601		TTGATTTTCAAATCAAATAAAATAAAGCAACTAACATCGGAAGGATTGAA	nem316_al2.seq
		AAATCAACCTTTAAAAAATTCTGCTCCTGGTATTAATGGAAATGAAACCAT	Majority
		1660 1670 1680 1690 1700	
1552		AAATCAACCTTTAAAAAATTCTGCTCCTGGTATTAATGGAAATGAAACCAT	2603_al2.seq
1651		AAATCAACCTTTAAAAAATTCTGCTCCTGGTATTAATGGAAATGAAACCAT	nem316_al2.seq
		CATCAATACAAAAGATAAGGCAGAAAGAATGGCGATTGTCAACCATTTTAC	Majority
		1710 1720 1730 1740 1750	
1602		CATCAATACAAAAGATAAGGCAGAAAGAATGGCGATTGTCAACCATTTTAC	2603_al2.seq
1701		CATCAATACAAAAGATAAGGCAGAAAGAATGGCGATTGTCAACCATTTTAC	nem316_al2.seq
		GTTGATTTTGTATATAAAAAAATTCTCTCAATTTAAATAAATTGAAAGAAAGC	Majority
		1760 1770 1780 1790 1800	
1652		GTTGATTTTGTATATAAAAAAATTCTCTCAATTTAAATAAATTGAAAGAAAGC	2603_al2.seq
1751		GTTGATTTTGTATATAAAAAAATTCTCTCAATTTAAATAAATTGAAAGAAAGC	nem316_al2.seq
		TCCAAAGGTAAGCGTATGTACGGCGAAAAAACCTTTGTCTTCTCCCATCC	Majority
		1810 1820 1830 1840 1850	
1702		TCCAAAGGTAAGCGTATGTACGGCGAAAAAACCTTTGTCTTCTCCCATCC	2603_al2.seq
1801		TCCAAAGGTAAGCGTATGTACGGCGAAAAAACCTTTGTCTTCTCCCATCC	nem316_al2.seq
		AGACTTTTACTGTCGGTTGTGGAATCTCACCACATCAGCTTTTCGCTCGGGG	Majority
		1860 1870 1880 1890 1900	
1751		AGACTTTTACTGTCGGTTGTGGAATCTCACCACATCAGCTTTTCGCTCGGGG	2603_al2.seq
1851		AGACTTTTACTGTCGGTTGTGGAATCTCACCACATCAGCTTTTCGCTCGGGG	nem316_al2.seq
		ACTGATGCTTTCACAACTGACAAATAAGTTGGAAGCGATTACCGCCGGTCC	Majority
		1910 1920 1930 1940 1950	
1801		ACTGATGCTTTCACAACTGACAAATAAGTTGGAAGCGATTACCGCCGGTCC	2603_al2.seq
1901		ACTGATGCTTTCACAACTGACAAATAAGTTGGAAGCGATTACCGCCGGTCC	nem316_al2.seq

FIGURE 20B

91/487

		GGAATTACACCCCTGCCCTGGAAGACACCTATAGCATAACAAAAAACTTG					Majority
		1960	1970	1980	1990	2000	
1851		GGAATTACACCCCTGCCCTGGAAGACACCTATAGCATAACAAAAAACTTG					2603_al2.seq
1951		GGAATTACACCCCTGCCCTGGAAGACACCTATAGCATAACAAAAAACTTG					nem316_al2.seq
		CAATTGCAAGTTTTTTTAATTACTAATTAGTAGTAGTGATTAAAAATCATA					Majority
		2010	2020	2030	2040	2050	
1901		CAATTGCAAGTTTTTTTAATTACTAATTAGTAGTAGTGATTAAAAATCATA					2603_al2.seq
2001		CAATTGCAAGTTTTTTTAATTACTAATTAGTAGTAGTGATTAAAAATCATA					nem316_al2.seq
		TTAATACCAAATTACTATGCTGTATCGTTTCTTTTCAGATTGCTATTTTT					Majority
		2060	2070	2080	2090	2100	
1951		TTAATACCAAATTACTATGCTGTATCGTTTCTTTTCAGATTGCTATTTTT					2603_al2.seq
2051		TTAATACCAAATTACTATGCTGTATCGTTTCTTTTCAGATTGCTATTTTT					nem316_al2.seq
		AGTTTTTCTTAAAAAGATAAAACAAAATTCCCAAAATAATACAACCAAGAA					Majority
		2110	2120	2130	2140	2150	
2001		AGTTTTTCTTAAAAAGATAAAACAAAATTCCCAAAATAATACAACCAAGAA					2603_al2.seq
2101		AGTTTTTCTTAAAAAGATAAAACAAAATTCCCAAAATAATACAACCAAGAA					nem316_al2.seq
		TTGTCAGTCTCTCCACCAATAATCATTCCTGTTTTAGGAAGAAATGATTGT					Majority
		2160	2170	2180	2190	2200	
2051		TTGTCAGTCTCTCCACCAATAATCATTCCTGTTTTAGGAAGAAATGATTGT					2603_al2.seq
2151		TTGTCAGTCTCTCCACCAATAATCATTCCTGTTTTAGGAAGAAATGATTGT					nem316_al2.seq
		GGAAAAAGCGGTTGTCATCGTTTAGGATTTGTTGCTGGAAGAGTTTCTTT					Majority
		2210	2220	2230	2240	2250	
2101		GGAAAAAGCGGTTGTCATCGTTTAGGATTTGTTGCTGGAAGAGTTTCTTT					2603_al2.seq
2201		GGAAAAAGCGGTTGTCATCGTTTAGGATTTGTTGCTGGAAGAGTTTCTTT					nem316_al2.seq
		TTCGTTTTCTACCTCTACTTCTCTGTGTTTTATTAGCAACTACAGCAACTA					Majority
		2260	2270	2280	2290	2300	
2151		TTCGTTTTCTACCTCTACTTCTCTGTGTTTTATTAGCAACTACAGCAACTA					2603_al2.seq
2251		TTCGTTTTCTACCTCTACTTCTCTGTGTTTTATTAGCAACTACAGCAACTA					nem316_al2.seq
		CAGCATCCTTCATAGATATACGGTAACCAGTTAGTGCTTTTGCTTCTCGA					Majority
		2310	2320	2330	2340	2350	
2201		CAGCATCCTTCATAGATATACGGTAACCAGTTAGTGCTTTTGCTTCTCGA					2603_al2.seq
2301		CAGCATCCTTCATAGATATACGGTAACCAGTTAGTGCTTTTGCTTCTCGA					nem316_al2.seq
		AAAAATATACTTACCAGGTAATAAACCTTCAACCTCAATTTCTCCCTTATC					Majority
		2360	2370	2380	2390	2400	
2251		AAAAATATACTTACCAGGTAATAAACCTTCAACCTCAATTTCTCCCTTATC					2603_al2.seq
2351		AAAAATATACTTACCAGGTAATAAACCTTCAACCTCAATTTCTCCCTTATC					nem316_al2.seq
		ATCAGTTACTAATGAAGTAATCCCATCTTTCATCGGTCGTAATTCGTCCTAT					Majority
		2410	2420	2430	2440	2450	
2301		ATCAGTTACTAATGAAGTAATCCCATCTTTCATCGGTCGTAATTCGTCCTAT					2603_al2.seq
2401		ATCAGTTACTAATGAAGTAATCCCATCTTTCATCGGTCGTAATTCGTCCTAT					nem316_al2.seq
		TTTTAAAGCGAACTGGCTGATTCTGTTATCGTATAATAACAATATTACT					Majority
		2460	2470	2480	2490	2500	
2351		TTTTAAAGCGAACTGGCTGATTCTGTTATCGTATAATAACAATATTACT					2603_al2.seq
2451		TTTTAAAGCGAACTGGCTGATTCTGTTATCGTATAATAACAATATTACT					nem316_al2.seq
		CCTGATAGCCTTTTCTTTATCTTTCCTTCTTTTGTATATTTAATAAGTTT					Majority
		2510	2520	2530	2540	2550	
2401		CCTGATAGCCTTTTCTTTATCTTTCCTTCTTTTGTATATTTAATAAGTTT					2603_al2.seq
2501		CCTGATAGCCTTTTCTTTATCTTTCCTTCTTTTGTATATTTAATAAGTTT					nem316_al2.seq
		TAATCGGCCTGTTTCAACTTTTCGCTTAGGATTTATCTGTAATTGATTTG					Majority
		2560	2570	2580	2590	2600	
2451		TAATCGGCCTGTTTCAACTTTTCGCTTAGGATTTATCTGTAATTGATTTG					2603_al2.seq
2551		TAATCGGCCTGTTTCAACTTTTCGCTTAGGATTTATCTGTAATTGATTTG					nem316_al2.seq

FIGURE 20C

		ATAACTTATCATCTGGTATTTCAATATAAAAAAGGTACTATTGTTGAAACG Majority				
		2610	2620	2630	2640	2650
2501		ATAACTTATCATCTGGTATTTCAATATAAAAAAGGTACTATTGTTGAAACG 2603_al2.seq				
2601		ATAACTTATCATCTGGTATTTCAATATAAAAAAGGTACTATTGTTGAAACG nem316_al2.seq				
		CTTTGATCAGCTTTATAAGCACGACCAAAAGTACGAACCATTTGGGAGTGC Majority				
		2660	2670	2680	2690	2700
2551		CTTTGATCAGCTTTATAAGCACGACCAAAAGTACGAACCATTTGGGAGTGC 2603_al2.seq				
2651		CTTTGATCAGCTTTATAAGCACGACCAAAAGTACGAACCATTTGGGAGTGC nem316_al2.seq				
		TATCTTTGCTCTGACCATTAGTATCAGTAGGAGAAGTCAAGATACTCTTAT Majority				
		2710	2720	2730	2740	2750
2601		TATCTTTGCTCTGACCATTAGTATCAGTAGGAGAAGTCAAGATACTCTTAT 2603_al2.seq				
2701		TATCTTTGCTCTGACCATTAGTATCAGTAGGAGAAGTCAAGATACTCTTAT nem316_al2.seq				
		ACTTCTGCTTCAATTTCGCTATCTGTCAATTTGGCTCAATAAATCAACTTTT Majority				
		2760	2770	2780	2790	2800
2651		ACTTCTGCTTCAATTTCGCTATCTGTCAATTTGGCTCAATAAATCAACTTTT 2603_al2.seq				
2751		ACTTCTGCTTCAATTTCGCTATCTGTCAATTTGGCTCAATAAATCAACTTTT nem316_al2.seq				
		AAGTTGTCAGTCACAGTCCATAAACGATAAGAAATCCCCTCCTCTGTAGT Majority				
		2810	2820	2830	2840	2850
2701		AAGTTGTCAGTCACAGTCCATAAACGATAAGAAATCCCCTCCTCTGTAGT 2603_al2.seq				
2801		AAGTTGTCAGTCACAGTCCATAAACGATAAGAAATCCCCTCCTCTGTAGT nem316_al2.seq				
		ATTTGGCTGAAGTCCCTATCTGTGTGATTGTTAGTTGATTAGGGGTATCAG Majority				
		2860	2870	2880	2890	2900
2751		ATTTGGCTGAAGTCCCTATCTGTGTGATTGTTAGTTGATTAGGGGTATCAG 2603_al2.seq				
2851		ATTTGGCTGAAGTCCCTATCTGTGTGATTGTTAGTTGATTAGGGGTATCAG nem316_al2.seq				
		CATTTACACTGGCTACCGAAAAAAACGCTAATTGTACCAATCCTAAAAAG Majority				
		2910	2920	2930	2940	2950
2801		CATTTACACTGGCTACCGAAAAAAACGCTAATTGTACCAATCCTAAAAAG 2603_al2.seq				
2901		CATTTACACTGGCTACCGAAAAAAACGCTAATTGTACCAATCCTAAAAAG nem316_al2.seq				
		CAACATAGTAGAAGTCCTAAACTTTTTCTAATCTTTTTTCATTTTTTGATT Majority				
		2960	2970	2980	2990	3000
2851		CAACATAGTAGAAGTCCTAAACTTTTTCTAATCTTTTTTCATTTTTTGATT 2603_al2.seq				
2951		CAACATAGTAGAAGTCCTAAACTTTTTCTAATCTTTTTTCATTTTTTGATT nem316_al2.seq				
		CCCTTTCTTTTTCTCTCTTTTAAATTTTTCGTTTTTAAATATAATAGTAAAGC Majority				
		3010	3020	3030	3040	3050
2901		CCCTTTCTTTTTCTCTCTTTTAAATTTTTCGTTTTTAAATATAATAGTAAAGC 2603_al2.seq				
3001		CCCTTTCTTTTTCTCTCTTTTAAATTTTTCGTTTTTAAATATAATAGTAAAGC nem316_al2.seq				
		GACTAATATAAGAATAAAGTATGATAAGAGGAAATAAAGTTTATAGT Majority				
		3060	3070	3080	3090	3100
2951		GACTAATATAAGAATAAAGTATGATAAGAGGAAATAAAGTTTATAGT 2603_al2.seq				
3051		GACTAATATAAGAATAAAGTATGATAAGAGGAAATAAAGTTTATAGT nem316_al2.seq				
		GTGTTTGCAATTGTTTCAATTAATAAGTTCTTTTCTTTTAAACAGGAGGTACA Majority				
		3110	3120	3130	3140	3150
3001		GTGTTTGCAATTGTTTCAATTAATAAGTTCTTTTCTTTTAAACAGGAGGTACA 2603_al2.seq				
3101		GTGTTTGCAATTGTTTCAATTAATAAGTTCTTTTCTTTTAAACAGGAGGTACA nem316_al2.seq				
		TACTTGATTCCGATGCCCTCTAACTAGTAAACGATGTGAATTAATCGAATA Majority				
		3160	3170	3180	3190	3200
3051		TACTTGATTCCGATGCCCTCTAACTAGTAAACGATGTGAATTAATCGAATA 2603_al2.seq				
3151		TACTTGATTCCGATGCCCTCTAACTAGTAAACGATGTGAATTAATCGAATA nem316_al2.seq				
		AGGTGTACATGTTAGCAAAGTCGCATAATCCTTACCTTTAACAACCAATA Majority				
		3210	3220	3230	3240	3250
3101		AGGTGTACATGTTAGCAAAGTCGCATAATCCTTACCTTTAACAACCAATA 2603_al2.seq				
3201		AGGTGTACATGTTAGCAAAGTCGCATAATCCTTACCTTTAACAACCAATA nem316_al2.seq				

FIGURE 20D

93/487

```

      3260      3270      3280      3290      3300
ATTATGAAATAATTATCTGGCTTTTACAACTTATTGATCAACCTTATAG Majority
3151 ATTTAGAAAAATTATCTGGCTTTTACAACTTATTGATCAACCTTATAG 2603_al2.seq
3251 ATTTAGAAAAATTATCTGGCTTTTACAACTTATTGATCAACCTTATAG nem316_al2.seq

      3310      3320      3330      3340      3350
GCTAAAACTTCTTTGATATTATGAATATAAAAAATTTTCTTTTTTAAAG Majority
3201 GCTAAAACTTCTTTGATATTATGAATATAAAAAATTTTCTTTTTTAAAG 2603_al2.seq
3301 GCTAAAACTTCTTTGATATTATGAATATAAAAAATTTTCTTTTTTAAAG nem316_al2.seq

      3360      3370      3380      3390      3400
TTTATCTAAATCTGTAAATAACTTAGCTTTAGGTAAGCCCGGATGAGCTG Majority
3251 TTTATCTAAATCTGTAAATAACTTAGCTTTAGGTAAGCCCGGATGAGCTG 2603_al2.seq
3351 TTTATCTAAATCTGTAAATAACTTAGCTTTAGGTAAGCCCGGATGAGCTG nem316_al2.seq

      3410      3420      3430      3440      3450
TGATAACAGTATGTGAACCTTTTCCACCAATTGGCAAGGAGGTTCTTCA Majority
3301 TGATAACAGTATGTGAACCTTTTCCACCAATTGGCAAGGAGGTTCTTCA 2603_al2.seq
3401 TGATAACAGTATGTGAACCTTTTCCACCAATTGGCAAGGAGGTTCTTCA nem316_al2.seq

      3460      3470      3480      3490      3500
AGGTGTCCTGCTCCTTTTTTCAAGAACACTACTGCTAGTCCCGCATAGAT Majority
3351 AGGTGTCCTGCTCCTTTTTTCAAGAACACTACTGCTAGTCCCGCATAGAT 2603_al2.seq
3451 AGGTGTCCTGCTCCTTTTTTCAAGAACACTACTGCTAGTCCCGCATAGAT nem316_al2.seq

      3510      3520      3530      3540      3550
AGGTAATTTTTGCTTGATAGACGGTATATCAATATATCCAATCATTTCAG Majority
3401 AGGTAATTTTTGCTTGATAGACGGTATATCAATATATCCAATCATTTCAG 2603_al2.seq
3501 AGGTAATTTTTGCTTGATAGACGGTATATCAATATATCCAATCATTTCAG nem316_al2.seq

      3560      3570      3580      3590      3600
TAATCTCAAGCATGTGGGCGTATTCAGCAATACCTTTTTTTCTTTTTTCA Majority
3451 TAATCTCAAGCATGTGGGCGTATTCAGCAATACCTTTTTTTCTTTTTTCA 2603_al2.seq
3551 TAATCTCAAGCATGTGGGCGTATTCAGCAATACCTTTTTTTCTTTTTTCA nem316_al2.seq

      3610      3620      3630      3640      3650
GTATAGGGATCTGATAGGCGGCTTGGGTCCAGTGTTCTATTATAAGCTTT Majority
3501 GTATAGGGATCTGATAGGCGGCTTGGGTCCAGTGTTCTATTATAAGCTTT 2603_al2.seq
3601 GTATAGGGATCTGATAGGCGGCTTGGGTCCAGTGTTCTATTATAAGCTTT nem316_al2.seq

      3660      3670      3680      3690      3700
TGCTAACTCAAATCGTCTATTAATCTCTTTAGTATTTAATTTTTTGGGTTT Majority
3551 TGCTAACTCAAATCGTCTATTAATCTCTTTAGTATTTAATTTTTTGGGTTT 2603_al2.seq
3651 TGCTAACTCAAATCGTCTATTAATCTCTTTAGTATTTAATTTTTTGGGTTT nem316_al2.seq

      3710      3720      3730      3740      3750
GATTATCAAAGTTAGTTACTTGATTATTAGCTTTAATATTATAGTACCAA Majority
3601 GATTATCAAAGTTAGTTACTTGATTATTAGCTTTAATATTATAGTACCAA 2603_al2.seq
3701 GATTATCAAAGTTAGTTACTTGATTATTAGCTTTAATATTATAGTACCAA nem316_al2.seq

      3760      3770      3780      3790      3800
TTTGAAATAAAAAGGATATGAGGTTATCAAAAAGACCAACTAAGAACAAATAG Majority
3651 TTTGAAATAAAAAGGATATGAGGTTATCAAAAAGACCAACTAAGAACAAATAG 2603_al2.seq
3751 TTTGAAATAAAAAGGATATGAGGTTATCAAAAAGACCAACTAAGAACAAATAG nem316_al2.seq

      3810      3820      3830      3840      3850
TATCAGGCCTACATTTCATCCATCGATTTTAAAAAGACCGATTTCCTTAAGGT Majority
3701 TATCAGGCCTACATTTCATCCATCGATTTTAAAAAGACCGATTTCCTTAAGGT 2603_al2.seq
3801 TATCAGGCCTACATTTCATCCATCGATTTTAAAAAGACCGATTTCCTTAAGGT nem316_al2.seq

      3860      3870      3880      3890      3900
TTTTCTGAAATTTTCTCCCATTTATGATTCAATTCCTTTTCTAACACTTG Majority
3751 TTTTCTGAAATTTTCTCCCATTTATGATTCAATTCCTTTTCTAACACTTG 2603_al2.seq
3851 TTTTCTGAAATTTTCTCCCATTTATGATTCAATTCCTTTTCTAACACTTG nem316_al2.seq

```

FIGURE 20E



95/487

	ATACGTCGCAATPGATTTCTCTCACTTAAGTTTTTTTAGCAGCTCTCTCTCAAA	Majority
	4560 4570 4580 4590 4600	
4451	ATACGTCGATTCGATTTCCTTTCTGACTAAGTTTTTTTAGCAGCTCTCTCTCAAA	2603_a12.seq
4551	ATACGTCGATTCGATTTCCTTTCTGACTAAGTTTTTTTAGCAGCTCTCTCTCAAA	nem316_a12.seq
	ATCCTGTGTTTGATTATTAGATTCTATCGTATAGTAAAAACGTGATACCA	Majority
	4610 4620 4630 4640 4650	
4501	ATCCTGTGTTTGATTATTAGATTCTATCGTATAGTAAAAACGTGATACCA	2603_a12.seq
4601	ATCCTGTGTTTGATTATTAGATTCTATCGTATAGTAAAAACGTGATACCA	nem316_a12.seq
	CTGGATACAATAAAATAGATAGACCTATTAGAAAAAGAATGATAAAAGGA	Majority
	4660 4670 4680 4690 4700	
4551	CTGGATACAATAAAATAGATAGACCTATTAGAAAAAGAATGATAAAAGGA	2603_a12.seq
4651	CTGGATACAATAAAATAGATAGACCTATTAGAAAAAGAATGATAAAAGGA	nem316_a12.seq
	AGATTTGACTTCTTCTTTTTTTTTTTGTTTTTTTGTTCATTTTTTTACTCTT	Majority
	4710 4720 4730 4740 4750	
4601	AGATTTGACTTCTTCTTTTTTTTTTTGTTTTTTTGTTCATTTTTTTACTCTT	2603_a12.seq
4701	AGATTTGACTTCTTCTTTTTTTTAA...GTTTTTTTGTTCATTTTTTTACTCTT	nem316_a12.seq
	CACGTCATCTCCTAGATAATGGCTCTTGCTTATGATCTAAGAGTACTTCT	Majority
	4760 4770 4780 4790 4800	
4651	CACGTCATCTCCTAGATAATGGCTCTTGCTTATGATCTAAGAGTACTTCT	2603_a12.seq
4748	CACGTCATCTCCTAATAAATGGCTCTTGCTTATGATCTAAGAGTACTTCT	nem316_a12.seq
	ACTGAAATACCCCTTAGATCATAAGCACAGCTTTAACTGTGCTTATACATC	Majority
	4810 4820 4830 4840 4850	
4701	ACTGAAATACCCCTTAGATCATAAGCACAGCTTTAACTGTGCTTATACATC	2603_a12.seq
4798	ACTGAAATACCCCTTAGATCATAAGCACAGCTTTAACTGTGCTTATACATC	nem316_a12.seq
	ATCAAAGACTAGCCCTTAAGCTTCCTTTGATTGGCGTTTTTTTCATGATAAC	Majority
	4860 4870 4880 4890 4900	
4751	ATCAAAGACTAGCCCTTAAGCTTCCTTTGATTGGCGTTTTTTTCATGATAAC	2603_a12.seq
4848	ATCAAAGACTAGCCCTTAAGCTTCCTTTGATTGGCGTTTTTTTCATGATAAC	nem316_a12.seq
	TACTGCTCCAAGCATAAATGCTTAAACCAATAATTGTGAAAAGAATTGTAC	Majority
	4910 4920 4930 4940 4950	
4801	TACTGCTCCAAGCATAAATGCTTAAACCAATAATTGTGAAAAGAATTGTAC	2603_a12.seq
4898	TACTGCTCCAAGCATAAATGCTTAAACCAATAATTGTGAAAAGAATTGTAC	nem316_a12.seq
	CAATACCACCTGTTTTGTGGGATTGTTACTTTTTTTGTTTTGTACTTGTTTG	Majority
	4960 4970 4980 4990 5000	
4851	CAATACCACCTGTTTTGTGGGATTGTTACTTTTTTTGTTTTGTACTTGTTTG	2603_a12.seq
4948	CAATACCACCTGTTTTGTGGGATTGTTACTTTTTTTGTTTTGTACTTGTTTG	nem316_a12.seq
	GCATCTTTTTTTTACAGGTTTTTTGTTATCTGCGTTGTCAGTTTTAGCCCC	Majority
	5010 5020 5030 5040 5050	
4901	GCATCTTTTTTTTACAGGTTTTTTGTTATCTGCGTTGTCAGTTTTAGCCCC	2603_a12.seq
4998	GCATCTTTTTTTTACAGGTTTTTTGTTATCTGCGTTGTCAGTTTTAGCCCC	nem316_a12.seq
	TTTTCTGTATGATGTTTGAATTACTTCAAAGTTTATATTAACCTGCCAATT	Majority
	5060 5070 5080 5090 5100	
4945	TTTTCTGTATGATGTTTGAATTACTTCAAAGTTTATATTAACCTGCCAATT	2603_a12.seq
5048	TTTTCTGTATGATGTTTGAATTACTTCAAAGTTTATATTAACCTGCCAATT	nem316_a12.seq
	TCCCATATCCTGCTGCTGCTTGTGTTTTCTTCCAGGTTGTAAGTGCCTTTT	Majority
	5110 5120 5130 5140 5150	
4995	TCCCATATCCTGCTGCTGCTTGTGTTTTCTTCCAGGTTGTAAGTGCCTTTT	2603_a12.seq
5098	TCCCATATCCTGCTGCTGCTTGTGTTTTCTTCCAGGTTGTAAGTGCCTTTT	nem316_a12.seq
	TCCAGACCTGTAATTTCAAATTGACCTTGGTTCGTTTCAGGTGTAATTTAAT	Majority
	5160 5170 5180 5190 5200	
5045	TCCAGACCTGTAATTTCAAATTGACCTTGGTTCGTTTCAGGTGTAATTTAAT	2603_a12.seq
5148	TCCAGACCTGTAATTTCAAATTGACCTTGGTTCGTTTCAGGTGTAATTTAAT	nem316_a12.seq

FIGURE 20G

FIGURE 20H

97/487

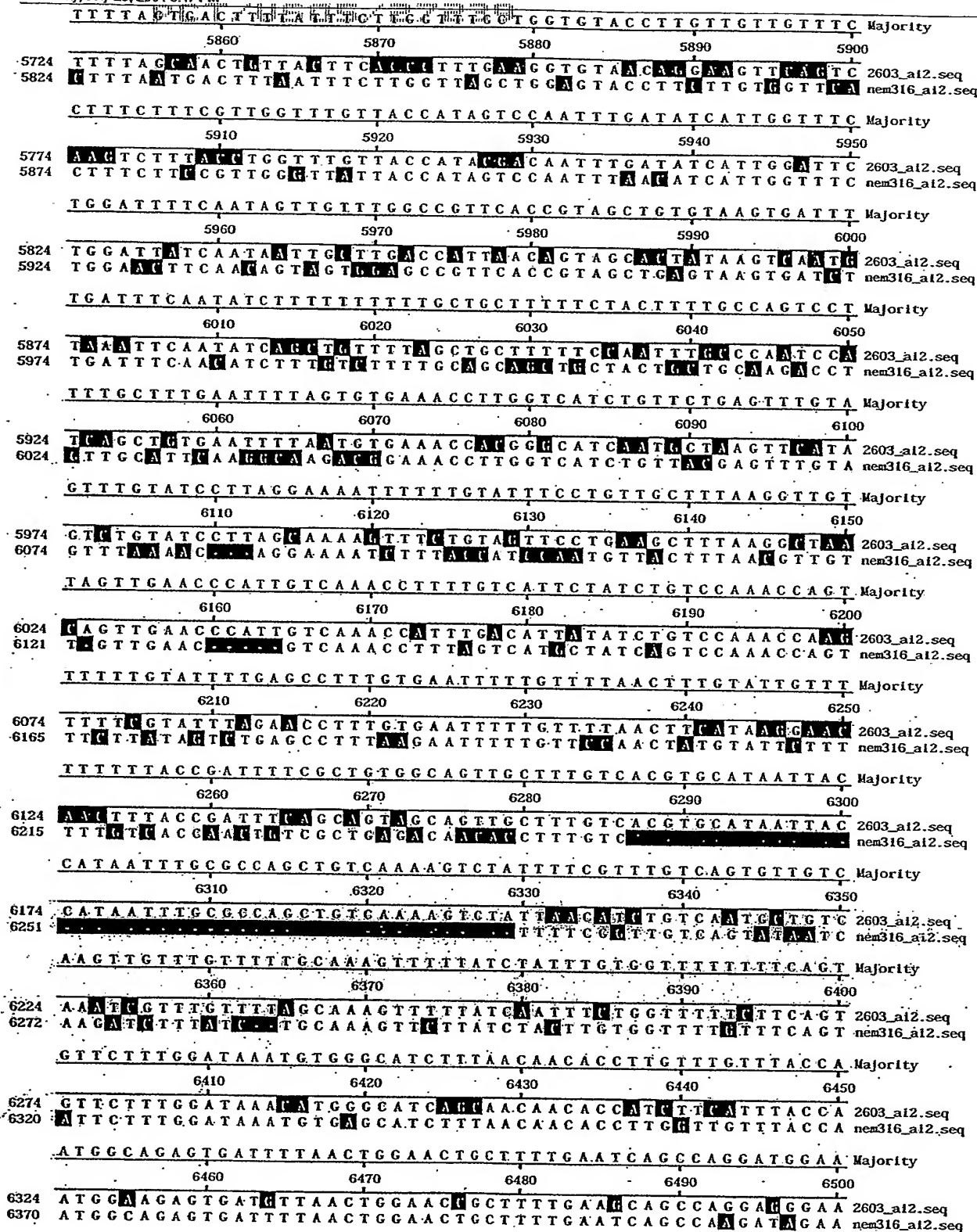


FIGURE 20I

98/487

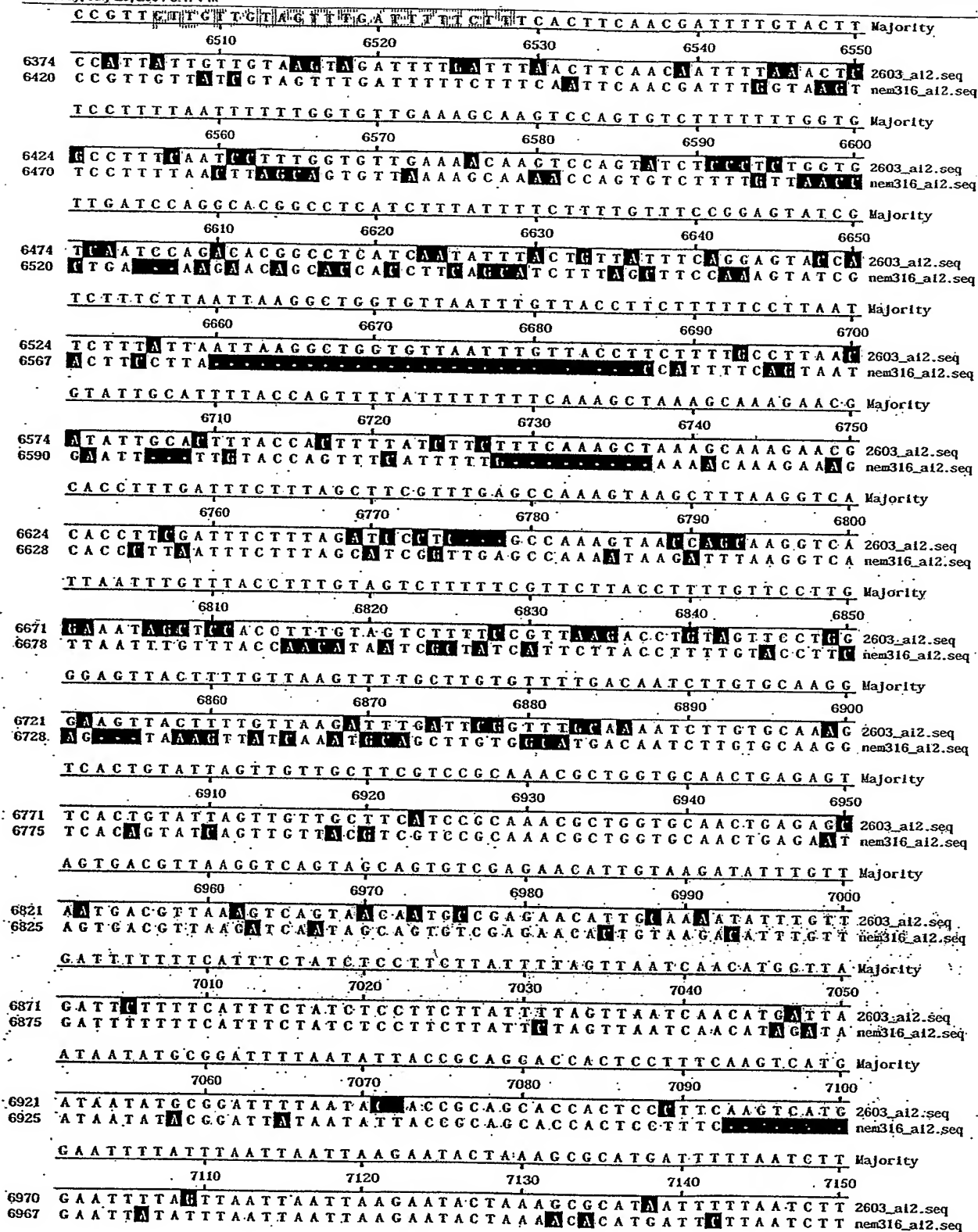


FIGURE 20J

99/487

	TTTTTCTGGATATATGAGTAACTTCTTATATCTTTTCCAAATATAAATT	Majority
	7160 7170 7180 7190 7200	
7020	TTTTGATGGATATATCACTAGATTTCTTATACTTTTCCAAATATAAATT	2603_al2.seq
7017	TTTTCTCTAGATATATCACTAGATTTCTTATATCTTTTCCAAATATAAATT	nem316_al2.seq
	GCACCTGCAATAGACATCATAGCTCCACCTATTAAAAATGAAAGATAGAAT	Majority
	7210 7220 7230 7240 7250	
7070	CCACCTGCAATAGACATCATAGCTCCACCTATTAAAAATGAAAGATAGAAT	2603_al2.seq
7067	CCACCTGCAATAGACATCATAGCTCCACCTATTAAAAATGAAAGATAGAAT	nem316_al2.seq
	TCCTTTCCCACCTGTCATCGGAATAATTCTTTTGGTGGAAATATGCGTGT	Majority
	7260 7270 7280 7290 7300	
7120	TGCTTTCCCACCTGTCATCGGAATAATTCTTTTGGTGGAAATATGCGTGT	2603_al2.seq
7117	TCCTTTCCCACCTGTCATCGGAATAATTCTTTTGGTGGAAATATGCGTGT	nem316_al2.seq
	TGGTAATTAATGCTTGTACCTTCCCTCATGATATTCAGAAATCTGTTTA	Majority
	7310 7320 7330 7340 7350	
7170	TGGTAATTAATGCTTGTACCTTCCCTCATGATATTCAGAAATCTGTTTA	2603_al2.seq
7167	TGGTAATTAATGCTTGTACCTTCCCTCATGATATTCAGAAATCTGTTTA	nem316_al2.seq
	TAAACAGCTATTATATTTTTTATCGATCCTTTAACCACCTTCAAAAAGTTAA	Majority
	7360 7370 7380 7390 7400	
7220	TAAACAGCTATTATATTTTTTATCGATCCTTTAACCACCTTCAAAAAGTTAA	2603_al2.seq
7217	TAAACAGCTATTATATTTTTTATCGATCCTTTAACAACCTTCAAAAAGTTAA	nem316_al2.seq
	AATTGGTTTATTAGTAATTTTTTGATAATCCTTCGGCGAAACTGCTTCTA	Majority
	7410 7420 7430 7440 7450	
7270	AATTGGTTTATTAGTAATTTTTTGATAATCCTTCGGCGAAACTGCTTCTA	2603_al2.seq
7267	AATTGGTTTATTAGTAATTTTTTGATAATCCTTCGGCGAAACTGCTTCTA	nem316_al2.seq
	TAACTGATATTTGCCATCTTTCAAATCTTTGTAAGAAATTTTGCCCGTTT	Majority
	7460 7470 7480 7490 7500	
7320	TAACTGATATTTGCCATCTTTCAAATCTTTGTAAGAAATTTTGCCCGTTT	2603_al2.seq
7317	TAACTGATATTTGCCATCTTTCAAATCTTTGTAAGAAATTTTGCCCGTTT	nem316_al2.seq
	TCTCCCGTCACTACTTTTGAATTATTATTTTTTATTGCTAAATAAAGTTT	Majority
	7510 7520 7530 7540 7550	
7370	TCTCCCGTCACTACTTTTGAATTATTATTTTTTATTGCTAAATAAAGTTT	2603_al2.seq
7367	TCTCCCGTCACTACTTTTGAATTATTATTTTTTATTGCTAAATAAAGTTT	nem316_al2.seq
	ATAATCTTCATTAAATTCCTTGAAGTTCAAACGCTAGCTCCTTTGAGAAGCA	Majority
	7560 7570 7580 7590 7600	
7420	ATAATCTTCATTAAATTCCTTGAAGTTCAAACGCTAGCTCCTTTGAGAAGCA	2603_al2.seq
7417	ATAATCTTCATTAAATTCCTTGAAGTTCAAACGCTAGCTCCTTTGAGAAGCA	nem316_al2.seq
	ACTTATTATTATCTTTATCAACTTTTGTAAATTCAAATTTACCTAACTTC	Majority
	7610 7620 7630 7640 7650	
7470	ACTTATTATTATCTTTATCAACTTTTGTAAATTCAAATTTACCTAACTTC	2603_al2.seq
7467	ACTTATTATTATCTTTATCAACTTTTGTAAATTCAAATTTACCTAACTTC	nem316_al2.seq
	TTCTCGTTTTTAATCGTTATTGTAGGATATTCTCTCACATCACCGAATTTT	Majority
	7660 7670 7680 7690 7700	
7520	TTCTCGTTTTTAATCGTTATTGTAGGATATTCTCTCACATCACCGAATTTT	2603_al2.seq
7517	TTCTCGTTTTTAATCGTTATTGTAGGATATTCTCTCACATCACCGAATTTT	nem316_al2.seq
	AGGGATTGGAAAAATCTCTAAGTGTATTAGGATCCTCTGATTTAGGATTCA	Majority
	7710 7720 7730 7740 7750	
7570	AGGGATTGGAAAAATCTCTAAGTGTATTAGGATCCTCTGATTTAGGATTCA	2603_al2.seq
7567	AGGGATTGGAAAAATCTCTAAGTGTATTAGGATCCTCTGATTTAGGATTCA	nem316_al2.seq
	ATGTTGTTCTACCATTAGTGTATAGAAATTTGTTACTTATAAAAAGTGTCA	Majority
	7760 7770 7780 7790 7800	
7620	ATGTTGTTCTACCATTAGTGTATAGAAATTTGTTACTTATAAAAAGTGTCA	2603_al2.seq
7617	ATGTTGTTCTACCATTAGTGTATAGAAATTTGTTACTTATAAAAAGTGTCA	nem316_al2.seq

FIGURE 20K

100/487

	TCTAGTTTTCACATCATATGTGAGTGTTACTTTTTTGTCTTCTCCTAAGTT	Majority
	7810 7820 7830 7840 7850	
7670	TCTAGTTTTCACATCATATGTGAGTGTTACTTTTTTGTCTTCTCCTAAGTT	2603_a12.seq
7667	TCTAGTTTTCACATCATATGTGAGTGTTACTTTTTTGTCTTCTCCTAAGTT	nen316_a12.seq
	CAAAACCTCTAACCTAGAGTTTATTTTTTGTATGTATTCTAATTTAACCCTT	Majority
	7860 7870 7880 7890 7900	
7720	CAAAACCTCTAACCTAGAGTTTATTTTTTGTATGTATTCTAATTTAACCCTT	2603_a12.seq
7717	CAAAACCTCTAACCTAGAGTTTATTTTTTGTATGTATTCTAATTTAACCCTT	nen316_a12.seq
	TAAGTATTCCACCATCATTATTAGGCCCCACCAGTTGCAATGCTATCTTTC	Majority
	7910 7920 7930 7940 7950	
7770	TAAGTATTCCACCATCATTATTAGGCCCCACCAGTTGCAATGCTATCTTTC	2603_a12.seq
7767	TAAGTATTCCACCATCATTATTAGGCCCCACCAGTTGCAATGCTATCTTTC	nen316_a12.seq
	ATTATACTTCCATCATTTCCTGTAAAGTATAATCACTTGCTTGTAATGT	Majority
	7960 7970 7980 7990 8000	
7820	ATTATACTTCCATCATTTCCTGTAAAGTATAATCACTTGCTTGTAATGT	2603_a12.seq
7817	ATTATACTTCCATCATTTCCTGTAAAGTATAATCACTTGCTTGTAATGT	nen316_a12.seq
	TTGTCCGTTGCCAAGCTGTAAATTGATTTTGTCAACCATAGGATCTTCTA	Majority
	8010 8020 8030 8040 8050	
7870	TTGTCCGTTGCCAAGCTGTAAATTGATTTTGTCAACCATAGGATCTTCTA	2603_a12.seq
7867	TTGTCCGTTGCCAAGCTGTAAATTGATTTTGTCAACCATAGGATCTTCTA	nen316_a12.seq
	TAGTTCCATTAACAATTGAGTTTTCTTTTGTAAATCTTTTCAAAATTGT	Majority
	8060 8070 8080 8090 8100	
7920	TAGTTCCATTAACAATTGAGTTTTCTTTTGTAAATCTTTTCAAAATTGT	2603_a12.seq
7917	TAGTTCCATTAACAATTGAGTTTTCTTTTGTAAATCTTTTCAAAATTGT	nen316_a12.seq
	TGCTGAATTTTATAGATAAAATTTTCACTTGTATGATCGGCTGAAGTTAC	Majority
	8110 8120 8130 8140 8150	
7970	TGCTGAATTTTATAGATAAAATTTTCACTTGTATGATCGGCTGAAGTTAC	2603_a12.seq
7967	TGCTGAATTTTATAGATAAAATTTTCACTTGTATGATCGGCTGAAGTTAC	nen316_a12.seq
	TATCGGGGTGTAGTACTCAGGTTTGGAAAGAGAATGACTTCATTAGTTCTG	Majority
	8160 8170 8180 8190 8200	
8020	TATCGGGGTGTAGTACTCAGGTTTGGAAAGAGAATGACTTCATTAGTTCTG	2603_a12.seq
8017	TATCGGGGTGTAGTACTCAGGTTTGGAAAGAGAATGACTTCATTAGTTCTG	nen316_a12.seq
	TTATTTCTCCATCTGAAAGTTTAAAGCTTCTCTTTCAATTTTTTGAAAA	Majority
	8210 8220 8230 8240 8250	
8070	TTATTTCTCCATCTGAAAGTTTAAAGCTTCTCTTTCAATTTTTTGAAAA	2603_a12.seq
8067	TTATTTCTCCATCTGAAAGTTTAAAGCTTCTCTTTCAATTTTTTGAAAA	nen316_a12.seq
	GTACCATCTTGATTTTTCTTATACTCCTCATTATAAACTTGTCTAAAAGC	Majority
	8260 8270 8280 8290 8300	
8120	GTACCATCTTGATTTTTCTTATACTCCTCATTATAAACTTGTCTAAAAGC	2603_a12.seq
8117	GTACCATCTTGATTTTTCTTATACTCCTCATTATAAACTTGTCTAAAAGC	nen316_a12.seq
	AGATATATCTATACCAAAATTAAGATGTCATAATTTTTCTGTTTTAAAC	Majority
	8310 8320 8330 8340 8350	
8170	AGATATATCTATACCAAAATTAAGATGTCATAATTTTTCTGTTTTAAAC	2603_a12.seq
8167	AGATATATCTATACCAAAATTAAGATGTCATAATTTTTCTGTTTTAAAC	nen316_a12.seq
	TATTTATATAAAGTTTGGTTGGTTCATGTTCTTTTACTGGTCCATTT	Majority
	8360 8370 8380 8390 8400	
8220	TATTTATATAAAGTTTGGTTGGTTCATGTTCTTTTACTGGTCCATTT	2603_a12.seq
8217	TATTTATATAAAGTTTGGTTGGTTCATGTTCTTTTACTGGTCCATTT	nen316_a12.seq
	CGATAAAATTGTACCTTTAGGGTAATTAAGATTAAATCTAAATAATGAAC	Majority
	8410 8420 8430 8440 8450	
8270	CGATAAAATTGTACCTTTAGGGTAATTAAGATTAAATCTAAATAATGAAC	2603_a12.seq
8267	CGATAAAATTGTACCTTTAGGGTAATTAAGATTAAATCTAAATAATGAAC	nen316_a12.seq

FIGURE 20L

101/487

TTTTTTC TAAAGT TTTCCAGAGATTATCTGTGTTTGATAACTATCTAAGGGAA Majority
8460 8470 8480 8490 8500

8320 TTTTTC TAAAGT TTTCCAGAGATTATCTGTGTTTGATAACTATCTAAGGGAA 2603_a12.seq
8317 TTTTTC TAAAGT TTTCCAGAGATTATCTGTGTTTGATAACTATCTAAGGGAA nem316_a12.seq

ACAAAAAGTAACTCTCCCCATTTCCITTTTATATCCTCGGGCTTATCAGTA Majority
8510 8520 8530 8540 8550

8370 AAAAAAGTAACTCTCCCCATTTCCITTTTATATCCTCGGGCTTATCAGTA 2603_a12.seq
8367 AAAAAAGTAACTCTCCCCATTTCCITTTTATATCCTCGGGCTTATCAGTA nem316_a12.seq

AGTAGAAAAATTACTTTTATTTAGATATCCATTTTTTTTTTCATTTGTTCAA Majority
8560 8570 8580 8590 8600

8420 AGTAGAAAAATTACTTTTATTTAGATATCCATTTTTTTTTTCATTTGTTCAA 2603_a12.seq
8417 AGTAGAAAAATTACTTTTATTTAGATATCCATTTTTTTTTTCATTTGTTCAA nem316_a12.seq

TTGGCTTTTCATATGATGCACCCAGTTTAAAATTATTAATAGCATATGATC Majority
8610 8620 8630 8640 8650

8470 TTGGCTTTTCATATGATGCACCCAGTTTAAAATTATTAATAGCATATGATC 2603_a12.seq
8467 TTGGCTTTTCATATGATGCACCCAGTTTAAAATTATTAATAGCATATGATC nem316_a12.seq

TTGTTGGAACACCATCAGTTATATGAACAATAATTTTTTGA CTATTTCGA Majority
8660 8670 8680 8690 8700

8520 TTGTTGGAACACCATCAGTTATATGAACAATAATTTTTTGA CTATTTCGA 2603_a12.seq
8517 TTGTTGGAACACCATCAGTTATATGAACAATAATTTTTTGA CTATTTCGA nem316_a12.seq

TTTACTTGACTCAAAATATCATCTGCCCTCCATGAAGGCTTTTCATAGTAA Majority
8710 8720 8730 8740 8750

8570 TTTACTTGACTCAAAATATCATCTGCCCTCCATGAAGGCTTTTCATAGTAA 2603_a12.seq
8567 TTTACTTGACTCAAAATATCATCTGCCCTCCATGAAGGCTTTTCATAGTAA nem316_a12.seq

TGTTTCTCCTACTTTACTAAGATAGTACTGCTTTTGTCTCTCTGGAGTTA Majority
8760 8770 8780 8790 8800

8620 TGTTTCTCCTACTTTACTAAGATAGTACTGCTTTTGTCTCTCTGGAGTTA 2603_a12.seq
8617 TGTTTCTCCTACTTTACTAAGATAGTACTGCTTTTGTCTCTCTGGAGTTA nem316_a12.seq

GTCCGTTTGTAGTTGATCCCCATTTAGCTTTAGGAGCTTCTGTCCGAATC Majority
8810 8820 8830 8840 8850

8670 GTCCGTTTGTAGTTGATCCCCATTTAGCTTTAGGAGCTTCTGTCCGAATC 2603_a12.seq
8667 GTCCGTTTGTAGTTGATCCCCATTTAGCTTTAGGAGCTTCTGTCCGAATC nem316_a12.seq

CTTTTTATAATCTCTTCAGCATTATTTGTTAATTGTTTATGACTATAATT Majority
8860 8870 8880 8890 8900

8720 CTTTTTATAATCTCTTCAGCATTATTTGTTAATTGTTTATGACTATAATT 2603_a12.seq
8717 CTTTTTATAATCTCTTCAGCATTATTTGTTAATTGTTTATGACTATAATT nem316_a12.seq

CTCTGCTCTGAATTGTTGAACITTAGTTTGAAGGCCATAATATTTATCATCTT Majority
8910 8920 8930 8940 8950

8770 CTCTGCTCTGAATTGTTGAACITTAGTTTGAAGGCCATAATATTTATCATCTT 2603_a12.seq
8767 CTCTGCTCTGAATTGTTGAACITTAGTTTGAAGGCCATAATATTTATCATCTT nem316_a12.seq

CTTTAAATCCTTTTACGACATCTACACTCCTACCATCAAAAATATCTGAA Majority
8960 8970 8980 8990 9000

8820 CTTTAAATCCTTTTACGACATCTACACTCCTACCATCAAAAATATCTGAA 2603_a12.seq
8817 CTTTAAATCCTTTTACGACATCTACACTCCTACCATCAAAAATATCTGAA nem316_a12.seq

CCATAGGTAACATAATGCAACCCTATTATCACTGTTTGCTCCTAAAAATATC Majority
9010 9020 9030 9040 9050

8870 CCATAGGTAACATAATGCAACCCTATTATCACTGTTTGCTCCTAAAAATATC 2603_a12.seq
8867 CCATAGGTAACATAATGCAACCCTATTATCACTGTTTGCTCCTAAAAATATC nem316_a12.seq

TTTTACTGCGGTCCCAAGAGCTTTCGGCAGCTTTCTTGGCTTTTATTATGCC Majority
9060 9070 9080 9090 9100

8920 TTTTACTGCGGTCCCAAGAGCTTTCGGCAGCTTTCTTGGCTTTTATTATGCC 2603_a12.seq
8917 TTTTACTGCGGTCCCAAGAGCTTTCGGCAGCTTTCTTGGCTTTTATTATGCC nem316_a12.seq

FIGURE 20M

102/487

		TTTGAAAATTTCGCCCATCGTTATTCATTGAGTTAGAATTATCGAGTACG Majority				
		9110	9120	9130	9140	9150
8970	TTTGAAAATTTCGCCCATCGTTATTCATTGAGTTAGAATTATCGAGTACG	2603_a12.seq				
8967	TTTGAAAATTTCGCCCATCGTTATTCATTGAGTTAGAATTATCGAGTACG	nem316_a12.seq				
		AAGACAACATCTAACGGCTTTTGTGTTGTCCTGCTTTTACTATGGTTTT Majority				
		9160	9170	9180	9190	9200
9020	AAGACAACATCTAACGGCTTTTGTGTTGTCCTGCTTTTACTATGGTTTT	2603_a12.seq				
9017	AAGACAACATCTAACGGCTTTTGTGTTGTCCTGCTTTTACTATGGTTTT	nem316_a12.seq				
		TCCACTGACAGTTAACTCAATTTTATATTTATTATGAGCTAAATCACCTA Majority				
		9210	9220	9230	9240	9250
9070	TCCACTGACAGTTAACTCAATTTTATATTTATTATGAGCTAAATCACCTA	2603_a12.seq				
9067	TCCACTGACAGTTAACTCAATTTTATATTTATTATGAGCTAAATCACCTA	nem316_a12.seq				
		CTTCTGAAAATACGTTTAGATAATGTTCCCTCTGGAATTTCTCTTATATGC Majority				
		9260	9270	9280	9290	9300
9120	CTTCTGAAAATACGTTTAGATAATGTTCCCTCTGGAATTTCTCTTATATGC	2603_a12.seq				
9117	CTTCTGAAAATACGTTTAGATAATGTTCCCTCTGGAATTTCTCTTATATGC	nem316_a12.seq				
		TCACCTTCACTTGAATATGCGGTTAACTGCTTTTGCCTCTGACTTTCCATT Majority				
		9310	9320	9330	9340	9350
9170	TCACCTTCACTTGAATATGCGGTTAACTGCTTTTGCCTCTGACTTTCCATT	2603_a12.seq				
9167	TCACCTTCACTTGAATATGCGGTTAACTGCTTTTGCCTCTGACTTTCCATT	nem316_a12.seq				
		TGGAACTGAACCTTTAAACATGCTCAAGTTTATAAGATTCCCTTTGTATCTT Majority				
		9360	9370	9380	9390	9400
9220	TGGAACTGAACCTTTAAACATGCTCAAGTTTATAAGATTCCCTTTGTATCTT	2603_a12.seq				
9217	TGGAACTGAACCTTTAAACATGCTCAAGTTTATAAGATTCCCTTTGTATCTT	nem316_a12.seq				
		CATAAATTCCCTGTGGGGGGATACTGCTTATCTAGTTCTTCGTGATTTTGT Majority				
		9410	9420	9430	9440	9450
9270	CATAAATTCCCTGTGGGGGGATACTGCTTATCTAGTTCTTCGTGATTTTGT	2603_a12.seq				
9267	CATAAATTCCCTGTGGGGGGATACTGCTTATCTAGTTCTTCGTGATTTTGT	nem316_a12.seq				
		CCAATTGTGGAATTTTTATCACCACTATTTTGTATCGTAGTTTTTCCATT Majority				
		9460	9470	9480	9490	9500
9320	CCAATTGTGGAATTTTTATCACCACTATTTTGTATCGTAGTTTTTCCATT	2603_a12.seq				
9317	CCAATTGTGGAATTTTTATCACCACTATTTTGTATCGTAGTTTTTCCATT	nem316_a12.seq				
		ACTCTCAACCTTAACTTGCCAAAGTCTGGTTAGTCTTTTTATAACCTTCGGC Majority				
		9510	9520	9530	9540	9550
9370	ACTCTCAACCTTAACTTGCCAAAGTCTGGTTAGTCTTTTTATAACCTTCGGC	2603_a12.seq				
9367	ACTCTCAACCTTAACTTGCCAAAGTCTGGTTAGTCTTTTTATAACCTTCGGC	nem316_a12.seq				
		CGCGCTGTTTCTTCTGATAAAGTATAAATCTCCAGGTATGAGATTATCAAAA Majority				
		9560	9570	9580	9590	9600
9420	CGCGCTGTTTCTTCTGATAAAGTATAAATCTCCAGGTATGAGATTATCAAAA	2603_a12.seq				
9417	CGCGCTGTTTCTTCTGATAAAGTATAAATCTCCAGGTATGAGATTATCAAAA	nem316_a12.seq				
		GTAGCTTCACTCTGTTAGCTCAGCAGTTACTTTTCTATTTTACTTTCTCGC Majority				
		9610	9620	9630	9640	9650
9470	GTAGCTTCACTCTGTTAGCTCAGCAGTTACTTTTCTATTTTACTTTCTCGC	2603_a12.seq				
9467	GTAGCTTCACTCTGTTAGCTCAGCAGTTACTTTTCTATTTTACTTTCTCGC	nem316_a12.seq				
		ATGAGCAGTAGTTTTTAAACAAAGGTAGCTTTTGAAAGTGGTTTCTTCT Majority				
		9660	9670	9680	9690	9700
9520	ATGAGCAGTAGTTTTTAAACAAAGGTAGCTTTTGAAAGTGGTTTCTTCT	2603_a12.seq				
9517	ATGAGCAGTAGTTTTTAAACAAAGGTAGCTTTTGAAAGTGGTTTCTTCT	nem316_a12.seq				
		GGTCATCTGTCTTTTTTAACAACCTAACTTTTCTTTAGCACCATTTTCCGGT Majority				
		9710	9720	9730	9740	9750
9570	GGTCATCTGTCTTTTTTAACAACCTAACTTTTCTTTAGCACCATTTTCCGGT	2603_a12.seq				
9567	GGTCATCTGTCTTTTTTAACAACCTAACTTTTCTTTAGCACCATTTTCCGGT	nem316_a12.seq				

FIGURE 20N

103/487

	A C G G T A C T T T C C C T A A A A C A T T G G T A T T A A G C G G T A T T T G C G A C A A A C A	Majority
	9760 9770 9780 9790 9800	
9620	A C G G T A C T T T C C C C T A A A A C A T T G G T A T T A A G C G G T A T T T G C G A C A A A C A	2603_a12.seq
9617	A C G G T A C T T T C C C C T A A A A C A T T G G T A T T A A G C G G T A T T T G C G A C A A A C A	nem316_a12.seq
	A A A A A G A C T T A A C G T C A A T A T T T T A G A A A A T T T T T G G T A T T T T C T C A T T T	Majority
	9810 9820 9830 9840 9850	
9670	A A A A A G A C T T A A C G T C A A T A T T T T A G A A A A T T T T T G G T A T T T T C T C A T T T	2603_a12.seq
9667	A A A A A G A C T T A A C G T C A A T A T T T T A G A A A A T T T T T G G T A T T T T C T C A T T T	nem316_a12.seq
	T A C A A C T C C T A T T T G T G C C G A A A T G T C G T T T C T A A A T C T A A G A T C A G A T A C	Majority
	9860 9870 9880 9890 9900	
9720	T A C A A C T C C T A T T T G T G C C G A A A T G T C G T T T C T A A A T C T A A G A T C A G A T A C	2603_a12.seq
9717	T A C A A C T C C T A T T T G T G C C G A A A T G T C G T T T C T A A A T C T A A G A T C A G A T A C	nem316_a12.seq
	A G A A T A T C C T A G A A T A T A C A A A C T A T C A C T T A T T A T G A T A T C A A T A A T T T	Majority
	9910 9920 9930 9940 9950	
9770	A G A A T A T C C T A G A A T A T A C A A A C T A T C A C T T A T T A T G A T A T C A A T A A T T T	2603_a12.seq
9767	A G A A T A T C C T A G A A T A T A C A A A C T A T C A C T T A T T A T G A T A T C A A T A A T T T	nem316_a12.seq
	C T T A T T A T A A G G T A T G G A A T T T T A A T G T T T T T C C C A A T T T T T G A A T G A T	Majority
	9960 9970 9980 9990 10000	
9820	C T T A T T A T A A G G T A T G G A A T T T T A A T G T T T T T C C C A A T T T T T G A A T A A T	2603_a12.seq
9817	C T T A T T A T A A G G T A T G G A A T T T T A A T G T T T T T C C C A A T T T T T G A A T G A T	nem316_a12.seq
	T T T T C T T T T T A T T T G A T A A T C T T A T T T T T A T T A T C T T A G A A A T A T T T T C A	Majority
	10010 10020 10030 10040 10050	
9870	T T T T C T T T T T A T T T G A T A A T C T T A T T T T T A T T A T C T T A G A A A T A T T T T C A	2603_a12.seq
9867	T T T T C T T T T T A T T T G A T A A T C T T A T T T T T A T T A T C T T A G A A A T A T T T T C A	nem316_a12.seq
	A T T A G C T T A A G T A G T T G A T T T T T C T T T T T T A T G T T T T A A A A T A T T G C T T	Majority
	10060 10070 10080 10090 10100	
9920	A T T A G C T T A A G T A G T T G A T T T T T C T T T T T T A T G T T T T A A A A T A T T G C T T	2603_a12.seq
9917	A T T A G C T T A A G T A G T T G A T T T T T C T T T T T T A T G T T T T A A A A T A T T G C T T	nem316_a12.seq
	A A A A A T A A T G T T T G A G A G A G A G T T T A C T G A A T T G A T T G A A A A T T A T T T A C	Majority
	10110 10120 10130 10140 10150	
9970	A A A A A T A A T G T T T G A G A G A G A G T T T A C T G A A T T G A T T G A A A A T T A T T T A C	2603_a12.seq
9967	A A A A A T A A T G T T T G A G A G A G A G T T T A C T G A A T T G A T T G A A A A T T A T T T A C	nem316_a12.seq
	A A A A A G A C A T C C T T A A T C A A A T A A A A C T T C T A A C T T T A T G C T A T G A T T A C	Majority
	10160 10170 10180 10190 10200	
10018	A A A A A G A C A T C C T T A A T C A A A T A A A A C T T C T A A C T T T A T G C T A T G A T T A C	2603_a12.seq
10017	A A A A A G A C A T C C T T A A T C A A A T A A A A C T T C T A A C T T T A T G C T A T G A T T A C	nem316_a12.seq
	T A C C C T T C C A T T A C T C T A G A C A A A T C A T G T C A T C A A C T T G G T T T A T C T G A	Majority
	10210 10220 10230 10240 10250	
10068	T A C C C T T C C A T T A C T C T A G A C A A A T C A T G T C A T C A A C T T G G T T T A T C T G A	2603_a12.seq
10067	T A C C C T T C C A T T A C T C T A G A C A A A T C A T G T C A T C A A C T T G G T T T A T C T G A	nem316_a12.seq
	A C T A C T T A T T A G G A A A T A T T T G T C A T G A T T T A A C A A C T T T A T T T A A C A G T C	Majority
	10260 10270 10280 10290 10300	
10118	A C T A C T T A T T A G G A A A T A T T T G T C A T G A T T T A A C A A C T T T A T T T A A C A G T C	2603_a12.seq
10117	A C T A C T T A T T A G G A A A T A T T T G T C A T G A T T T A A C A A C T T T A T T T A A C A G T C	nem316_a12.seq
	A A C T C T C T C T G A A T A T C G A A A A G A G T A C A A T A G T C T A C C A A T C T A A T G G T	Majority
	10310 10320 10330 10340 10350	
10168	A A C T C T C T C T G A A T A T C G A A A A G A G T A C A A T A G T C T A C C A A T C T A A T G G T	2603_a12.seq
10167	A A C T C T C T C T G A A T A T C G A A A A G A G T A C A A T A G T C T A C C A A T C T A A T G G T	nem316_a12.seq
	G T A A C T A G A G A A C A A G C T T T C A A A T A T A T T T A T C A T C A A T C A C A C G T T T T	Majority
	10360 10370 10380 10390 10400	
10218	G T A A C T A G A G A A C A A G C T T T C A A A T A T A T T T A T C A T C A A T C A C A C G T T T T	2603_a12.seq
10217	G T A A C T A G A G A A C A A G C T T T C A A A T A T A T T T A T C A T C A A T C A C A C G T T T T	nem316_a12.seq

FIGURE 200

104/487

		ACAACTTTTAAATTTTGGATTCAGGCAGGTTACCTTTAA	Majority
		10410 10420 10430 10440 10450	
10268	ACAACTTTTAAATTTTGGATTCAGGCAGGTTACCTTTAA	2603_a12.seq	
10267	ACAACTTTTAAATTTTGGATTCAGGCAGGTTACCTTTAA	nen316_a12.seq	
		CTTACTTTAGTGAAAAATTTGGACTATCTTGTGCAACTGCTTATCGCATA	Majority
		10460 10470 10480 10490 10500	
10318	CTTACTTTAGTGAAAAATTTGGACTATCTTGTGCAACTGCTTATCGCATA	2603_a12.seq	
10317	CTTACTTTAGTGAAAAATTTGGACTATCTTGTGCAACTGCTTATCGCATA	nen316_a12.seq	
		CGAAAAACATATTAGTCCGTTACTAGAAAAACCTGGATTTCAGATTTTCAA	Majority
		10510 10520 10530 10540 10550	
10368	CGAAAAACATATTAGTCCGTTACTAGAAAAACCTGGATTTCAGATTTTCAA	2603_a12.seq	
10367	CGAAAAACATATTAGTCCGTTACTAGAAAAACCTGGATTTCAGATTTTCAA	nen316_a12.seq	
		AAATACTATTACCGGTGACGAGTATCGAATTCGCTATTTAATCGCATTTT	Majority
		10560 10570 10580 10590 10600	
10418	AAATACTATTACCGGTGACGAGTATCGAATTCGCTATTTAATCGCATTTT	2603_a12.seq	
10417	AAATACTATTACCGGTGACGAGTATCGAATTCGCTATTTAATCGCATTTT	nen316_a12.seq	
		TAAATGCTCGATTITGGTATAGAAGTTTATCCCTTCTTAAGATGGATAAA	Majority
		10610 10620 10630 10640 10650	
10468	TAAATGCTCGATTITGGTATAGAAGTTTATCCCTTCTTAAGATGGATAAA	2603_a12.seq	
10467	TAAATGCTCGATTITGGTATAGAAGTTTATCCCTTCTTAAGATGGATAAA	nen316_a12.seq	
		TTGCTTATCAAACGATTGTTATTAGAATACTCAACTACTTTTACTGCTTC	Majority
		10660 10670 10680 10690 10700	
10518	TTGCTTATCAAACGATTGTTATTAGAATACTCAACTACTTTTACTGCTTC	2603_a12.seq	
10517	TTGCTTATCAAACGATTGTTATTAGAATACTCAACTACTTTTACTGCTTC	nen316_a12.seq	
		TCATTACTTCCCAAATACATTTATTTTCTTTGATACATTGTTGTCTCTAT	Majority
		10710 10720 10730 10740 10750	
10568	TCATTACTTCCCAAATACATTTATTTTCTTTGATACATTGTTGTCTCTAT	2603_a12.seq	
10567	TCATTACTTCCCAAATACATTTATTTTCTTTGATACATTGTTGTCTCTAT	nen316_a12.seq	
		CATGGAAACGTATTAATTATAATGTAGTTGTCCCTTACTCATCCCTTTTC	Majority
		10760 10770 10780 10790 10800	
10618	CATGGAAACGTATTAATTATAATGTAGTTGTCCCTTACTCATCCCTTTTC	2603_a12.seq	
10617	CATGGAAACGTATTAATTATAATGTAGTTGTCCCTTACTCATCCCTTTTC	nen316_a12.seq	
		ATTGAACTACAAAAATATATTTATCTATGATACATTACAATATTGTGTCAA	Majority
		10810 10820 10830 10840 10850	
10668	ATTGAACTACAAAAATATATTTATCTATGATACATTACAATATTGTGTCAA	2603_a12.seq	
10667	ATTGAACTACAAAAATATATTTATCTATGATACATTACAATATTGTGTCAA	nen316_a12.seq	
		AAATGTTATTATAGATTCCCTTTAAAAATTAATTTAAAAAAAGACGATATAG	Majority
		10860 10870 10880 10890 10900	
10718	AAATGTTATTATAGATTCCCTTTAAAAATTAATTTAAAAAAAGACGATATAG	2603_a12.seq	
10717	AAATGTTATTATAGATTCCCTTTAAAAATTAATTTAAAAAAAGACGATATAG	nen316_a12.seq	
		ACTATATTTTCTTGCTTACGTTACTTCCCATAACTCTTTTCTAATCCA	Majority
		10910 10920 10930 10940 10950	
10768	ACTATATTTTCTTGCTTACGTTACTTCCCATAACTCTTTTCTAATCCA	2603_a12.seq	
10767	ACTATATTTTCTTGCTTACGTTACTTCCCATAACTCTTTTCTAATCCA	nen316_a12.seq	
		AATTGGACTGAGAAGCGTATCGATAATGTAATAGCTATTTTCGAAAATTA	Majority
		10960 10970 10980 10990 11000	
10818	AATTGGACTGAGAAGCGTATCGATAATGTAATAGCTATTTTCGAAAATTA	2603_a12.seq	
10817	AATTGGACTGAGAAGCGTATCGATAATGTAATAGCTATTTTCGAAAATTA	nen316_a12.seq	
		TCCCAAATTCGAAAATTAATTACAGCCACTCAAAGATGCTCTTCCCTTAT	Majority
		11010 11020 11030 11040 11050	
10868	TCCCAAATTCGAAAATTAATTACAGCCACTCAAAGATGCTCTTCCCTTAT	2603_a12.seq	
10867	TCCCAAATTCGAAAATTAATTACAGCCACTCAAAGATGCTCTTCCCTTAT	nen316_a12.seq	

FIGURE 20P

105/487

```

CTG GCT C C T A T C A T G A G T T G C T A T C A T T T T T T C C G A Majority
11060 11070 11080 11090 11100
10918 CTG GCT C C T A T C A T G A G T T G C T A T C T T T T T T T C C G A 2603_a12.seq
10917 CTG A C T C C T A T C A T G A G T T G C T A T C A T T T T T T C C G A nem316_a12.seq

A C A T T T A T T T T A G G A T T A A A T C A A T T A A T C C C T G A A A C A A T T T C A T T T C C Majority
11110 11120 11130 11140 11150
10967 A C A T T T A T T T T A G G A T T A A A T C A A T T A A T C C C T G A A A C A A T T T C A T T T C C 2603_a12.seq
10967 A C A T T T A T T T T A G G A T T A A A T C A A T T A A T C C C T G A A A C A A T T T C A T T T C C nem316_a12.seq

T T C A T G G A A C T A T C A T A G A C A T G A T A A A T T A A C T A C T A T T C T C C G A C C G A Majority
11160 11170 11180 11190 11200
11017 T T C A T G G A A C T A T C A T A G A C A T G A T A A A T T A A C T A C T A T T C T C C G A C C G A 2603_a12.seq
11017 T T C A T G G A A C T A T C A T A G A C A T G A T A A A T T A A C T A C T A T T C T C C G A C C G A nem316_a12.seq

T A A T T A C A A A T T G C T T A A G T G A A A T T G G A G A A T A C A C G T T T A A G G A A C A A Majority
11210 11220 11230 11240 11250
11067 T A A T T A C A A A T T G C T T A A G T A A A A T T G G A G A A T A C A C G T T T A A G A A C A A 2603_a12.seq
11067 T A A T T A C A A A T T G C T T A A G T G A A A T T G G A G A A T A C A C G T T T A A G G A A C A A nem316_a12.seq

C A T T T T C T T C C T T T T G T G C T C A T C T A G A A A G A A T T A T C A A A A A T C A T A T Majority
11260 11270 11280 11290 11300
11117 C A T T T T C T T C C T T T T G T A C T C A T C T A G A A A G A A T A T C A A A A A T C A T A T 2603_a12.seq
11117 C A T T T T C T T C C T T T T G T G C T C A C T A G A A A G A A T T A T C A A A A A T C A T A T nem316_a12.seq

T C C T C C G A T A C A G A T A G C C G T A C T A A C T A C A G A C T T T A T T A A T A A C C A A A Majority
11310 11320 11330 11340 11350
11167 T C C T C C G A T A C A G A T A G C C G T A C T A A C T A C A G A C T T T A T T A A T A A C C A A A 2603_a12.seq
11167 T C C T C C G A T A C A A A T A G C C G T A C T A A C T A C A G A C T T T A T T A A T A A C A A A A nem316_a12.seq

T T T T A A C A G A A T G T T T A T T A C A G A G G T T T T C T T C T A A A C A G A T T C A T T T C Majority
11360 11370 11380 11390 11400
11217 T T T T A A C A G A A T G T T A T T A C A G A G A T T T T C T T C T A A A A G A T T C A T T T C 2603_a12.seq
11217 T T T T A A C A G A A T G T T T A T A C A G A G G T T T T C T T C T A A A C A G A T T C A T T T C nem316_a12.seq

C A C C C T T A C T A T T T A T T A A C T G A T G A T C T T T C C A A T A T T A C T A A T C T T A A Majority
11410 11420 11430 11440 11450
11267 C A C C C T T A C T A T T T A T T A A C T G A T G A T C T T T C C A A T A T T A C T A A T C T T A A 2603_a12.seq
11267 C A C C C T T A C T A T T T A T T A A C T G A T G A T C T T T C C A A T A T T A C T A A T C T T A A nem316_a12.seq

T C C A G A T A T T A T T A T T A C C A A T C C A A A G C T T T C T T C C T T T A T C A A A C A T G Majority
11460 11470 11480 11490 11500
11317 T C C A G A A T T A T T A T T A T T A C C A A T A A A A G C T T T C T C C T T T A T C A A A C A T G 2603_a12.seq
11317 T C C A G A T A T T A T T A T T A T T A C C A A T C C A A A G C T T T C T T C C T T T A T A A A C A T G nem316_a12.seq

A G A T T T C T T C A G A G A G T T T A A T T A C A T A T A T T G A T T G A T T C A T A C T T C A Majority
11510 11520 11530 11540 11550
11367 A G A T T T C T T C A G A G A G T T T A A T T A C A T A T A T T G A T T G A T T A A T A C T T C A 2603_a12.seq
11367 A G A T T T C T T C A G A G A G T T T A A T T A C A T A T A T T G A T T G A T T C A T A C T T C A nem316_a12.seq

G A C C A G A T C A A T C A A A T C C A A G A A A T T A T T T C A T C A A T A C A G G A A G A A A A Majority
11560 11570 11580 11590 11600
11417 G A C C A A A T C A A T C A A A T C C A A A A A A T T A T T T C A T C A A T A C A G A A G A A A A 2603_a12.seq
11417 G A C C A G A T C A A T C A A A T C C A A G A A A T T A T T T C A T C A A T A C A G A A G A A A A nem316_a12.seq

A T A T T G T A A A C T T T T T T G C A A A A A C T A A T G A A A T A A C T A C T C G T A G C T C C T Majority
11610 11620 11630 11640 11650
11467 A T A T T G T A A A C T T T T T T G C A A A A A C T A A T G A A A T A A C T A A T C G T A G C T C C T 2603_a12.seq
11467 A T A T T G T A A A C T T T T T T G C A A A A A A A A T G A A A T A A C T A C T C G T A G C T C C T nem316_a12.seq

A T A A C T C T T A A A A A T T A A C A T T A A A A A G C T A G A G C A T T G T G T A A T G C T C T Majority
11660 11670 11680 11690 11700
11517 A T A A C T C T T A A A A A T T A A C A T T A A A A A G C T A G A G C A T T G T G T A A T G C T C T 2603_a12.seq
11517 A T A A C T C T T A A A A A T T A A C A T T A A A A A G C T A G A G C A T T G T G T A A T G C T C T nem316_a12.seq

```

FIGURE 20Q

106/487

	A G C T T T T T A A T G T T A A T T T T T T G A A T A A T A T A A T C C A A C T T T T C A A C T G Majority									
	11710	11720	11730	11740	11750					
11567	A G C T T T T T A A T G T T A A T T T T T T T T G A A T A A T A T A A T C C A A C T T T T C A A C T G 2603_al2.seq									
11567	A G C T T T T T A A T G T T A A T T T T T T T T G A A T A A T A T A A T C C A A C T T T T C A A C T G nem316_al2.seq									
	T T T T T T C C C A T G T G A A A T G T T C T T T A A T T C T T T T A G C A A T A T T C T G T T G T Majority									
	11760	11770	11780	11790	11800					
11617	T T T T T T C C C A T G T G A A A T G T T C T T T A A T T C T T T T A G C A A T A T T C T G T T G T 2603_al2.seq									
11617	T T T T T T C C C A T G T G A A A T G T T C T T T A A T T C T T T T A G C A A T A T T C T G T T G T nem316_al2.seq									
	A C T T T C T C T C T T A A T G C C T T A T C T T T T A C T A A T A A A T C A A G A G A T T C A T G Majority									
	11810	11820	11830	11840	11850					
11667	A G T T T C T C T C T T A A T G C C T T A T C T T T T A C T A A T A A A T C A A G A G A T T C A T G 2603_al2.seq									
11667	A G T T T C T C T C T T A A T G C C T T A T C T T T T A C T A A T A A A T C A A G A G A T T C A T G nem316_al2.seq									
	G A G T G A C T G A G T A T T T T C T T C C A T G A T T C C T A A C T C A G G G C T A T C A A Majority									
	11860	11870	11880	11890	11900					
11717	G A G T G A C T G A G T A T T T T C T T C C A T G A T T C C T A A C T C A G G G C T A T C A A 2603_al2.seq									
11717	G A G T G A C T G A G T A T T T T C T T C C A T G A T T C C T A A C T C A G G G C T A T C A A nem316_al2.seq									
	T A A C T T C A A C T G T T C C A C C G C G A T C T G T T G C A A T A A T A G C A C T T G A A A G T Majority									
	11910	11920	11930	11940	11950					
11767	T A A C T T C A A C T G T T C C A C C G C G A T C T G T T G C A A T A A T A G C A C T T G A A A G T 2603_al2.seq									
11767	T A A C T T C A A C T G T T C C A C C G C G A T C T G T T G C A A T A A T A G C A C T T G A A A G T nem316_al2.seq									
	A G A C C A G C T T C T A A A A T A G A G G T T G C T A A T C C C T C T G G A T A C A T T G A A G G Majority									
	11960	11970	11980	11990	12000					
11817	A G A C C A G C T T C T A A A A T A G A G G T T G C T A A T C C C T C T G G A T A C A T T G A A G G 2603_al2.seq									
11817	A G A C C A G C T T C T A A A A T A G A G G T T G C T A A T C C C T C T G G A T A C A T T G A A G G nem316_al2.seq									
	G T A A A C A A A G A T A T C A G T C T G T G C C A T T A A A G A C A T A G T C T G T T C A A A G T Majority									
	12010	12020	12030	12040	12050					
11867	G T A A A C A A A G A T A T C A G T C T G T G C C A T T A A A G A C A T A G T C T G T T C A A A G T 2603_al2.seq									
11867	G T A A A C A A A G A T A T C A G T C T G T G C C A T T A A A G A C A T A G T C T G T T C A A A G T nem316_al2.seq									
	T T A A T T T C C C C A A A A A G T T A A T C T G T T T G G A C T G A T A T T T C T C T T T C A A A Majority									
	12060	12070	12080	12090	12100					
11917	T T A A T T T C C C C A A A A A G T T A A T C T G T T T G G A C T G A T A T T T C T C T T T C A A A 2603_al2.seq									
11917	T T A A T T T C C C C A A A A A G T T A A T C T G T T T G G A C T G A T A T T T C T C T T T C A A A nem316_al2.seq									
	T G T G C T A A T T C A G G T C C G T C T C C T G C A A T C T G T A A A T A A A C A T T T T C A G A Majority									
	12110	12120	12130	12140	12150					
11967	T G T G C T A A T T C A G G T C C G T C T C C T G C A A T C T G T A A A T A A A C A T T T T C A G A 2603_al2.seq									
11967	T G T G C T A A T T C A G G T C C G T C T C C T G C A A T C T G T A A A T A A A C A T T T T C A G A nem316_al2.seq									
	G T A C T G T G A C A T C G A A A A T G C T T C T A A G A G C A A T T C A A T G C C T T T T T C T T Majority									
	12160	12170	12180	12190	12200					
12017	G T A C T G T G A C A T C G A A A A T G C T T C T A A G A G C A A T T C A A T G C C T T T T T C T T 2603_al2.seq									
12017	G T A C T G T G A C A T C G A A A A T G C T T C T A A G A G C A A T T C A A T G C C T T T T T C T T nem316_al2.seq									
	T A A T A A T T C T A C C A G C A T A A A G T G A T G A A A A T A T C A T C A G C A G A T T T T T C A Majority									
	12210	12220	12230	12240	12250					
12067	T A A T A A T T C T A C C A G C A T A A A G T G A T G A A A A T A T C A T C A G C A G A T T T T T C A 2603_al2.seq									
12067	T A A T A A T T C T A C C A G C A T A A A G T G A T G A A A A T A T C A T C A G C A G A T T T T T C A nem316_al2.seq									
	A G G T A A G C C G T A C C A G C A A A A T C A G A G C C T A G A C T T T C A G A T A C C G A A T T Majority									
	12260	12270	12280	12290	12300					
12117	A G G T A A G C C G T A C C A G C A A A A T C A G A G C C T A G A C T T T C A G A T A C C G A A T T 2603_al2.seq									
12117	A G G T A A G C C G T A C C A G C A A A A T C A G A G C C T A G A C T T T C A G A T A C C G A A T T nem316_al2.seq									
	A T A A A T A A C T C C T T T A G C T T C T A T A T T A A A A T G T T T T A A C C A T T C A A C G C Majority									
	12310	12320	12330	12340	12350					
12167	A T A A A T A A C T C C T T T A G C T T C T A T A T T A A A A T G T T T T A A C C A T T C A A C G C 2603_al2.seq									
12167	A T A A A T A A C T C C T T T A G C T T C T A T A T T A A A A T G T T T T A A C C A T T C A A C G C nem316_al2.seq									

FIGURE 20R

FIGURE 20S

108/487

	TTTTATAATATAGATCGGCATTGCGCTATTCATGTAATATTTTCGAAATGGTG	Majority
	13010 13020 13030 13040 13050	
12867	TTTTATAATATAGATCGGCATTGCGCTATTCATGTAATATTTTCGAAATGGTG	2603_a12.seq
12867	TTTTATAATATAGATCGGCATTGCGCTATTCATGTAATATTTTCGAAATGGTG	nen316_a12.seq
	AATGATTCAATACATGAAAAACATGCCCAAATTTTTTTAACTCGTGAAGAG	Majority
	13060 13070 13080 13090 13100	
12917	AATGATTCAATACATGAAAAACATGCCCAAATTTTTTTAACTCGTGAAGAG	2603_a12.seq
12917	AATGATTCAATACATGAAAAACATGCCCAAATTTTTTTAACTCGTGAAGAG	nen316_a12.seq
	TGTCCAATTTTCGTGTAACAGACCAATAAAATTAACCTGATAAGTCTTATA	Majority
	13110 13120 13130 13140 13150	
12967	TGTCCAATTTTCGTGTAACAGACCAATAAAATTAACCTGATAAGTCTTATA	2603_a12.seq
12967	TGTCCAATTTTCGTGTAACAGACCAATAAAATTAACCTGATAAGTCTTATA	nen316_a12.seq
	TCCCATCTCTGACAGACGATAATTTCATTTTCAGAGTCAACAAAATCAATAA	Majority
	13160 13170 13180 13190 13200	
13017	TCCCATCTCTGACAGACGATAATTTCATTTTCAGAGTCAACAAAATCAATAA	2603_a12.seq
13017	TCCCATCTCTGACAGACGATAATTTCATTTTCAGAGTCAACAAAATCAATAA	nen316_a12.seq
	ACATCTCTTCTGCAAAAGCCAGATGTTTCTTCGAAAACGCTCGTTTTTCATT	Majority
	13210 13220 13230 13240 13250	
13067	ACATCTCTTCTGCAAAAGCCAGATGTTTCTTCGAAAACGCTCGTTTTTCATT	2603_a12.seq
13067	ACATCTCTTCTGCAAAAGCCAGATGTTTCTTCGAAAACGCTCGTTTTTCATT	nen316_a12.seq
	AAAGCAGCCGAAGTAATACACTCTTCAATTTCTTTATAGTCAAATTCCTTG	Majority
	13260 13270 13280 13290 13300	
13117	AAAGCAGCCGAAGTAATACACTCTTCAATTTCTTTATAGTCAAATTCCTTG	2603_a12.seq
13117	AAAGCAGCCGAAGTAATACACTCTTCAATTTCTTTATAGTCAAATTCCTTG	nen316_a12.seq
	CATCACTAAATTTTCACGGTTTCATATCTTGATACAAACAAGATAACATAC	Majority
	13310 13320 13330 13340 13350	
13167	CATCACTAAATTTTCACGGTTTCATATCTTGATACAAACAAGATAACATAC	2603_a12.seq
13167	CATCACTAAATTTTCACGGTTTCATATCTTGATACAAACAAGATAACATAC	nen316_a12.seq
	CGACCTTAGGTAAATGAAGGTAATTTTTCATAATTATCTATCAAATCACCT	Majority
	13360 13370 13380 13390 13400	
13217	CGACCTTAGGTAAATGAAGGTAATTTTTCATAATTATCTATCAAATCACCT	2603_a12.seq
13217	CGACCTTAGGTAAATGAAGGTAATTTTTCATAATTATCTATCAAATCACCT	nen316_a12.seq
	AGGACAACCGAATCTTGATCTAAAGTCAAGAACCAATCAAATTCCTTGTC	Majority
	13410 13420 13430 13440 13450	
13267	AGGACAACCGAATCTTGATCTAAAGTCAAGAACCAATCAAATTCCTTGTC	2603_a12.seq
13267	AGGACAACCGAATCTTGATCTAAAGTCAAGAACCAATCAAATTCCTTGTC	nen316_a12.seq
	TACTGCAAATTTGACCGGATACAGTTCAAAGCATATGCAATCCCTTTATTTT	Majority
	13460 13470 13480 13490 13500	
13317	TACTGCAAATTTGACCGGATACAGTTCAAAGCATATGCAATCCCTTTATTTT	2603_a12.seq
13317	TACTGCAAATTTGACCGGATACAGTTCAAAGCATATGCAATCCCTTTATTTT	nen316_a12.seq
	CTGTTAAATAATCAACAGTTAGGTCGCCCTCTTTCATTATAATCGGCTACT	Majority
	13510 13520 13530 13540 13550	
13367	CTGTTAAATAATCAACAGTTAGGTCGCCCTCTTTCATTATAATCGGCTACT	2603_a12.seq
13367	CTGTTAAATAATCAACAGTTAGGTCGCCCTCTTTCATTATAATCGGCTACT	nen316_a12.seq
	AATTGAGAAATTTCTTCTTATTTTTTCGAGCCATTATCTACGATATAGAT	Majority
	13560 13570 13580 13590 13600	
13417	AATTGAGAAATTTCTTCTTATTTTTTCGAGCCATTATCTACGATATAGAT	2603_a12.seq
13417	AATTGAGAAATTTCTTCTTATTTTTTCGAGCCATTATCTACGATATAGAT	nen316_a12.seq
	GTGGCTTACTTTGAGGATAAAATTGCTCGAATGTTCTGATCTAAGCGTTCAA	Majority
	13610 13620 13630 13640 13650	
13467	GTGGCTTACTTTGAGGATAAAATTGCTCGAATGTTCTGATCTAAGCGTTCAA	2603_a12.seq
13467	GTGGCTTACTTTGAGGATAAAATTGCTCGAATGTTCTGATCTAAGCGTTCAA	nen316_a12.seq

FIGURE 20T

109/487

WO 2000/078518										PCT/US2000/078518	
TATTGCGGTTAAAGGTGACAAATACCCGCTAAATATTTTCATGTTCTATGCT										Majority	
13660 13670 13680 13690 13700											
13517	TATTGCGGTTAAAGGTGACAAATACCCGCTAAATATTTTCATGTTCTATGCT										2603_a12.seq
13517	TATTGCGGTTAAAGGTGACAAATACCCGCTAAATATTTTCATGTTCTATGCT										nem316_a12.seq
CTTTTCTAAAAATCTCTAAAAAACTGAATGACTGCTGCTTTTGTTATAAAA										Majority	
13710 13720 13730 13740 13750											
13567	CTTTTCTAAAAATCTCTAAAAAACTGAATGACTGCTGCTTTTGTTATAAAA										2603_a12.seq
13567	CTTTTCTAAAAATCTCTAAAAAACTGAATGACTGCTGCTTTTGTTATAAAA										nem316_a12.seq
ACGATACCGACATAGATAGTTACTGCTACTAAACTTTGAATGACATAATT										Majority	
13760 13770 13780 13790 13800											
13617	ACGATACCGACATAGATAGTTACTGCTACTAAACTTTGAATGACATAATT										2603_a12.seq
13617	ACGATACCGACATAGATAGTTACTGCTACTAAACTTTGAATGACATAATT										nem316_a12.seq
TACCAATGATACTGACATTTGAGTATTGATATAATAGAGTACAGCTCCAC										Majority	
13810 13820 13830 13840 13850											
13667	TACCAATGATACTGACATTTGAGTATTGATATAATAGAGTACAGCTCCAC										2603_a12.seq
13667	TACCAATGATACTGACATTTGAGTATTGATATAATAGAGTACAGCTCCAC										nem316_a12.seq
TAAGAGTAGCAGCAATTAAATAGCGCAGCATTCCTCTTTGTTAATTCITTA										Majority	
13860 13870 13880 13890 13900											
13717	TAAGAGTAGCAGCAATTAAATAGCGCAGCATTCCTCTTTGTTAATTCITTA										2603_a12.seq
13717	TAAGAGTAGCAGCAATTAAATAGCGCAGCATTCCTCTTTGTTAATTCITTA										nem316_a12.seq
AAAGTAAATACATCTCTTAAAGAGATAGCTTGATATAGGGAGACAATAAA										Majority	
13910 13920 13930 13940 13950											
13767	AAAGTAAATACATCTCTTAAAGAGATAGCTTGATATAGGGAGACAATAAA										2603_a12.seq
13767	AAAGTAAATACATCTCTTAAAGAGATAGCTTGATATAGGGAGACAATAAA										nem316_a12.seq
TTCAGTAATAACTGTAGAGATAATAGCTCCCATAGCACCTAAAAATTGGTA										Majority	
13960 13970 13980 13990 14000											
13817	TTCAGTAATAACTGTAGAGATAATAGCTCCCATAGCACCTAAAAATTGGTA										2603_a12.seq
13817	TTCAGTAATAACTGTAGAGATAATAGCTCCCATAGCACCTAAAAATTGGTA										nem316_a12.seq
TTAAAAGTATATTAAGCACAAACATTTGCCACAAGTCCAATAAACTGCAGAC										Majority	
14010 14020 14030 14040 14050											
13867	TTAAAAGTATATTAAGCACAAACATTTGCCACAAGTCCAATAAACTGCAGAC										2603_a12.seq
13867	TTAAAAGTATATTAAGCACAAACATTTGCCACAAGTCCAATAAACTGCAGAC										nem316_a12.seq
ATTGCTGTAAGCTTTTGTACGCTTTGAAGCCAGTAGATACTGTGTCCCTAA										Majority	
14060 14070 14080 14090 14100											
13917	ATTGCTGTAAGCTTTTGTACGCTTTGAAGCCAGTAGATACTGTGTCCCTAA										2603_a12.seq
13917	ATTGCTGTAAGCTTTTGTACGCTTTGAAGCCAGTAGATACTGTGTCCCTAA										nem316_a12.seq
AGCGTTACCATAAAGAAATGCAAATGATCATCAAA										Majority	
14110 14120 14130											
13967	AGCGTTACCATAAAGAAATGCAAATGATCATCAAA										2603_a12.seq
13967	AGCGTTACCATAAAGAAATGCAAATGATCATCAAA										nem316_a12.seq

Decoration 'Decoration #1': Shade (with solid black) residues that differ from the Consensus.

FIGURE 20U

110/487

		T C C A C A T C G G T C C A A T T A A C A T A T G A C G T G G C G C A T C A C C A G T A A T T C G G	Majority
		10 20 30 40 50	
1		T C C A C A T C G G T C C A A T T A A C A T A T G A C G T G G C G C A T C A C C A G T A A T T C G G	cohl_a12.seq
1		T C C A C A T C G G T C C A A T T A A C A T A T G A C G T G G C G C A T C A C C A G T A A T T C G G	a909_a12.seq
		T G A A T A A C A A T A T G T T T T G G A A T A A T C T C C A G T T G G T C A C A A A T A A T C G A	Majority
		60 70 80 90 100	
51		T G A A T A A C A A T A T G T T T T G G A A T A A T C T C C A G T T G G T C A C A A A T A A T C G A	cohl_a12.seq
51		T G A A T A A C A A T A T G T T T T G G A A T A A T C T C C A G T T G G T C A C A A A T A A T C G A	a909_a12.seq
		A A T A T A G T C T T C T T G A C T T A A C A A A C G T A A A C G A C C T T C A T G G T A A T C T C	Majority
		110 120 130 140 150	
101		A A T A T A G T C T T C T T G A C T T A A C A A A C G T A A A C G A C C T T C A T G G T A A T C T C	cohl_a12.seq
101		A A T A T A G T C T T C T T G A C T T A A C A A A C G T A A A C G A C C T T C A T G G T A A T C T C	a909_a12.seq
		T C T G C A T T C T T T G T A T T A G T C A T A A G A T G C A G A A G G T G T A A T T T T A T A C C C	Majority
		160 170 180 190 200	
151		T C T G C A T T C T T T G T A T T A T C A T A A G A T G C A G A A G G T G T A A T T T T A T A C C C	cohl_a12.seq
151		T C T G C A T T C T T T G T A T T A G T C A T A A G A T G C A G A A G G T G T A A T T T T A T A C C C	a909_a12.seq
		T G A A T A T C A T T A T C C G T A A C A C A T C G A C G A A C A T T T T C C A C C A T C A T A T C	Majority
		210 220 230 240 250	
201		T G A A T A T C A T T A T C C G T A A C A C A T C G A C G A A C A T T T T C C A C C A T C A T A T C	cohl_a12.seq
201		T G A A T A T C A T T A T C C G T A A C A C A T C G A C G A A C A T T T T C C A C C A T C A T A T C	a909_a12.seq
		A T G T G T C T C C C C T G G G A G A C C A T T T A T T A G G T G A G A A A C G A T T T C T A C T T	Majority
		260 270 280 290 300	
251		A T G T G T C T C C C C T G G G A G A C C A T T T A T T A G G T G A G A A A C G A T T T C T A C T T	cohl_a12.seq
251		A T G T G T C T C C C C T G G G A G A C C A T T T A T T A G G T G A G A A A C G A T T T C T A C T T	a909_a12.seq
		T A G G A G C T A A T T C T C G T A T T C T C T T A A C A G T T T T T T G T A A A G G T C A T A T	Majority
		310 320 330 340 350	
301		T A G G A G C T A A T T C T C G T A T T C T C T T A A C A G T T T T T T G T A A A G G T C A T A T	cohl_a12.seq
301		T A G G A G C T A A T T C T C G T A T T C T C T T A A C A G T T T T T T G T A A A G G T C A T A T	a909_a12.seq
		G A A T G T G C T C T A T T T A T T A A T G C A G A A G T T G C T T C A T A A G T T G T C T G A A G	Majority
		360 370 380 390 400	
351		G A A T G T G C T C T A T T T A T T A A T G C A G A A G T T G C T T C A T A A G T T G T C T G A A G	cohl_a12.seq
351		G A A T G T G C T C T A T T T A T T A A T G C A G A A G T T G C T T C A T A A G T T G T C T G A A G	a909_a12.seq
		G C C T A A T T C T A A A G T C A C A T G C A T T C T T T C A G A A A G T T C A C C G A G A T A G T	Majority
		410 420 430 440 450	
401		G C C T A A T T C T A A A G T C A C A T G C A T T C T T T C A G A A A G T T C A C C G A G A T A G T	cohl_a12.seq
401		G C C T A A T T C T A A A G T C A C A T G C A T T C T T T C A G A A A G T T C A C C G A G A T A G T	a909_a12.seq
		A T A T A G T T T C A T C A G G T A A G C A A T C C G G C C T T G T T C C G A T G T T G A T C C C G	Majority
		460 470 480 490 500	
451		A T A T A G T T T C A T C A G G T A A G C A A T C C G G C C T T G T T C C G A T G T T G A T C C C G	cohl_a12.seq
451		A T A T A G T T T C A T C A G G T A A G C A A T C C G G C C T T G T T C C G A T G T T G A T C C C G	a909_a12.seq
		A T A A C T C C T G G C T C A T T A A T A G C C T G T T C G T A A C G C T C T T T A A T T A T C T C	Majority
		510 520 530 540 550	
501		A T A A C T C C T G G C T C A T T A A T A G C C T G T T C G T A A C G C T C T T T A A T T A T C T C	cohl_a12.seq
501		A T A A C T C C T G G C T C A T T A A T A G C C T G T T C G T A A C G C T C T T T A A T T A T C T C	a909_a12.seq
		T A A C T T A G C A T G G G T A T T G G T A A A A T T T T G A A A A T A G A C T A A G T A T T T A T	Majority
		560 570 580 590 600	
551		T A A C T T A G C A T G G G T A T T G G T A A A A T T T T G A A A A T A G A C T A A G T A T T T A T	cohl_a12.seq
551		T A A C T T A G C A T G G G T A T T G G T A A A A T T T T G A A A A T A G A C T A A G T A T T T A T	a909_a12.seq
		T A A C C T C A G G C C A C T T T T C T A T G C A T G A A A T C A A T T T C T T T A T A G A A T T G T	Majority
		610 620 630 640 650	
601		T A A C C T C A G G C C A C T T T T C T A T G C A T G A A A T C A A T T T C T T T A T A G A A T T G T	cohl_a12.seq
601		T A A C C T C A G G C C A C T T T T C T A T G C A T G A A A T C A A T T T C T T T A T A G A A T T G T	a909_a12.seq

Figure 21

111/487

	TCACGAAATAGGAGCTTCTGGAGCAACTATAGCATCCCCTGAACCAGAAAC	Majority
	660 670 680 690 700	
651	TCACGAAATAGGAGCTTCTGGAGCAACTATAGCATCCCCTGAACCAGAAAC	cohl_al2.seq
651	TCACGAAATAGGAGCTTCTGGAGCAACTATAGCATCCCCTGAACCAGAAAC	a909_al2.seq
	TCTGCAAAAAGTGCACCCCTCCTCTAGCAACTGTTCCATCTCTGTTAGGAC	Majority
	710 720 730 740 750	
701	TCTGCAAAAAGTGCACCCCTCCTCTAGCAACTGTTCCATCTCTGTTAGGAC	cohl_al2.seq
701	TCTGCAAAAAGTGCACCCCTCCTCTAGCAACTGTTCCATCTCTGTTAGGAC	a909_al2.seq
	AGTCAAAAACCAGCATCTATAGGTAATTTAAATATTTTTTCTCCAAAGAGT	Majority
	760 770 780 790 800	
751	AGTCAAAAACCAGCATCTATAGGTAATTTAAATATTTTTTCTCCAAAGAGT	cohl_al2.seq
751	AGTCAAAAACCAGCATCTATAGGTAATTTAAATATTTTTTCTCCAAAGAGT	a909_al2.seq
	TCTCGATAATAATCATTAAATCGCACCATAACGTTTTTTCATAGGATAATT	Majority
	810 820 830 840 850	
801	TCTCGATAATAATCATTAAATCGCACCATAACGTTTTTTCATAGGATAATT	cohl_al2.seq
801	TCTCGATAATAATCATTAAATCGCACCATAACGTTTTTTCATAGGATAATT	a909_al2.seq
	GTATCACAATTTTAACTAAAAATAACCTCACTACTACAATAAAACTAAAAA	Majority
	860 870 880 890 900	
851	GTATCACAATTTTAACTAAAAATAACCTCACTACTACAATAAAACTAAAAA	cohl_al2.seq
851	GTATCACAATTTTAACTAAAAATAACCTCACTACTACAATAAAACTAAAAA	a909_al2.seq
	AGATTGGAACGTCAGTTAGTTCCAAATCTTTTATTTACTTCACTTTCTTTA	Majority
	910 920 930 940 950	
901	AGATTGGAACGTCAGTTAGTTCCAAATCTTTTATTTACTTCACTTTCTTTA	cohl_al2.seq
901	AGATTGGAACGTCAGTTAGTTCCAAATCTTTTATTTACTTCACTTTCTTTA	a909_al2.seq
	ACCAATCCTTGGCTAAAAAGATATACGCCAGTTAGATTCAAAATACCATAA	Majority
	960 970 980 990 1000	
951	ACCAATCCTTGGCTAAAAAGATATACGCCAGTTAGATTCAAAATACCATAA	cohl_al2.seq
951	ACCAATCCTTGGCTAAAAAGATATACGCCAGTTAGATTCAAAATACCATAA	a909_al2.seq
	GCAAGTATAAAAACCAGCTAAAAACATCTGTCGGAAAAATGAACCCCTAGGTA	Majority
	1010 1020 1030 1040 1050	
1001	GCAAGTATAAAAACCAGCTAAAAACATCTGTCGGAAAAATGAACCCCTAGGTA	cohl_al2.seq
1001	GCAAGTATAAAAACCAGCTAAAAACATCTGTCGGAAAAATGAACCCCTAGGTA	a909_al2.seq
	AATACGAGATAACCCAATTAAAAAAATGAGCAAACCCAATGTACCTTGGC	Majority
	1060 1070 1080 1090 1100	
1051	AATACGAGATAACCCAATTAAAAAAATGAGCAAACCCAATGTACCTTGGC	cohl_al2.seq
1051	AATACGAGATAACCCAATTAAAAAAATGAGCAAACCCAATGTACCTTGGC	a909_al2.seq
	ACAACAGTTTCCATATACTCTTAGGCATATAGTACTGCAATAAAATAATA	Majority
	1110 1120 1130 1140 1150	
1101	ACAACAGTTTCCATATACTCTTAGGCATATAGTACTGCAATAAAATAATA	cohl_al2.seq
1101	ACAACAGTTTCCATATACTCTTAGGCATATAGTACTGCAATAAAATAATA	a909_al2.seq
	CTACTCCCAAATATCATATAATGTTCCCATCGAGTCCCACTGGCAAACGA	Majority
	1160 1170 1180 1190 1200	
1151	CTACTCCCAAATATCATATAATGTTCCCATCGAGTCCCACTGGCAAACGA	cohl_al2.seq
1151	CTACTCCCAAATATCATATAATGTTCCCATCGAGTCCCACTGGCAAACGA	a909_al2.seq
	ATAGCCACCTGCAAATACTAAATGGGTTAAAGTTGGTCTCACTCTTTGAA	Majority
	1210 1220 1230 1240 1250	
1201	ATAGCCACCTGCAAATACTAAATGGGTTAAAGTTGGTCTCACTCTTTGAA	cohl_al2.seq
1201	ATAGCCACCTGCAAATACTAAATGGGTTAAAGTTGGTCTCACTCTTTGAA	a909_al2.seq
	AAATAAGTTTTTAAAGAAAGTATACATATACCAGAGATAATAGCATTCTACT	Majority
	1260 1270 1280 1290 1300	
1251	AAATAAGTTTTTAAAGAAAGTATACATATACCAGAGATAATAGCATTCTACT	cohl_al2.seq
1251	AAATAAGTTTTTAAAGAAAGTATACATATACCAGAGATAATAGCATTCTACT	a909_al2.seq

FIGURE 21A

112/487

	CGGATAAAATCTAGCTTGGAGGATACCACTTCTTAAGGTAACAGAAAGTGAC	Majority
	1310 1320 1330 1340 1350	
1301	CGGATAAAATCTAGCTTGGAGGATACCACTTCTTAAGGTAACAGAAAGTGAC	cohl_a12.seq
1301	CGGATAAAATCTAGCTTGGAGGATACCACTTCTTAAGGTAACAGAAAGTGAC	a909_a12.seq
	GCTCATAAATCGCAATAGCTATCTGGCTTACAGTATTACCAACCACAGTGA	Majority
	1360 1370 1380 1390 1400	
1351	GCTCATAAATCGCAATAGCTATCTGGCTTACAGTATTACCAACCACAGTGA	cohl_a12.seq
1351	GCTCATAAATCGCAATAGCTATCTGGCTTACAGTATTACCAACCACAGTGA	a909_a12.seq
	TTAACTTGAAAAATCTTGTAGAAAGATTTGGCAACTGTCTCTTAACACTT	Majority
	1410 1420 1430 1440 1450	
1401	TTAACTTGAAAAATCTTGTAGAAAGATTTGGCAACTGTCTCTTAACACTT	cohl_a12.seq
1401	TTAACTTGAAAAATCTTGTAGAAAGATTTGGCAACTGTCTCTTAACACTT	a909_a12.seq
	TCTTGAATAGTTTGGTCAAAATGCGATTACAGTGTCTGGGGCCAATATTTGAT	Majority
	1460 1470 1480 1490 1500	
1451	TCTTGAATAGTTTGGTCAAAATGCGATTACAGTGTCTGGGGCCAATATTTGAT	cohl_a12.seq
1451	TCTTGAATAGTTTGGTCAAAATGCGATTACAGTGTCTGGGGCCAATATTTGAT	a909_a12.seq
	GACCAATCCTAAACTGAAAAATAAGATAAATAGCAATAAATGCTTGAATAA	Majority
	1510 1520 1530 1540 1550	
1501	GACCAATCCTAAACTGAAAAATAAGATAAATAGCAATAAATGCTTGAATAA	cohl_a12.seq
1501	GACCAATCCTAAACTGAAAAATAAGATAAATAGCAATAAATGCTTGAATAA	a909_a12.seq
	GTTTACTATTTTGAACGAGATAACATTAGTCTTTTTTATATCTTTCTAATAT	Majority
	1560 1570 1580 1590 1600	
1551	GTTTACTATTTTGAACGAGATAACATTAGTCTTTTTTATATCTTTCTAATAT	cohl_a12.seq
1551	GTTTACTATTTTGAACGAGATAACATTAGTCTTTTTTATATCTTTCTAATAT	a909_a12.seq
	TGGCAAACAAGCCACGTAAGTTAGATAGAAAAACAATCGAAATTAAAAATTTC	Majority
	1610 1620 1630 1640 1650	
1601	TGGCAAACAAGCCACGTAAGTTAGATAGAAAAACAATCGAAATTAAAAATTTC	cohl_a12.seq
1601	TGGCAAACAAGCCACGTAAGTTAGATAGAAAAACAATCGAAATTAAAAATTTC	a909_a12.seq
	CCTCAACGATATTTAAATGGAATAAACCATTGTTAAAAAGGTAATTGCCTACA	Majority
	1660 1670 1680 1690 1700	
1651	CCTCAACGATATTTAAATGGAATAAACCATTGTTAAAAAGGTAATTGCCTACA	cohl_a12.seq
1651	CCTCAACGATATTTAAATGGAATAAACCATTGTTAAAAAGGTAATTGCCTACA	a909_a12.seq
	CCAATAAATGTTCTGATATCAAAGTTAGCAAATATAGCATACAAAGGAAT	Majority
	1710 1720 1730 1740 1750	
1701	CCAATAAATGTTCTGATATCAAAGTTAGCAAATATAGCATACAAAGGAAT	cohl_a12.seq
1701	CCAATAAATGTTCTGATATCAAAGTTAGCAAATATAGCATACAAAGGAAT	a909_a12.seq
	CGCAAAGACATAGTTGAGAGCTACCATAGATACAGTCAAGCTAACTGTAC	Majority
	1760 1770 1780 1790 1800	
1751	CGCAAAGACATAGTTGAGAGCTACCATAGATACAGTCAAGCTAACTGTAC	cohl_a12.seq
1751	CGCAAAGACATAGTTGAGAGCTACCATAGATACAGTCAAGCTAACTGTAC	a909_a12.seq
	CAAAATAAACTAGCTTTAATAAAATCTTTTGCACCTCTCTCTATTTTTCCAC	Majority
	1810 1820 1830 1840 1850	
1801	CAAAATAAACTAGCTTTAATAAAATCTTTTGCACCTCTCTCTATTTTTCCAC	cohl_a12.seq
1801	CAAAATAAACTAGCTTTAATAAAATCTTTTGCACCTCTCTCTATTTTTCCAC	a909_a12.seq
	AAAAATAGCGAAACTTGCTAAAAATAGAGCTAGAGCAACCATATTCATCGG	Majority
	1860 1870 1880 1890 1900	
1851	AAAAATAGCGAAACTTGCTAAAAATAGAGCTAGAGCAACCATATTCATCGG	cohl_a12.seq
1851	AAAAATAGCGAAACTTGCTAAAAATAGAGCTAGAGCAACCATATTCATCGG	a909_a12.seq
	TAAACCGATAAAAGGTTTCTCGACCACGATTAGCAAGTATAACTTTTTAAAA	Majority
	1910 1920 1930 1940 1950	
1901	TAAACCGATAAAAGGTTTCTCGACCACGATTAGCAAGTATAACTTTTTAAAA	cohl_a12.seq
1901	TAAACCGATAAAAGGTTTCTCGACCACGATTAGCAAGTATAACTTTTTAAAA	a909_a12.seq

FIGURE 21B

113/487

		1960 1970 1980 1990 2000					Majority
1951	1951	GTGATCTTAAATAAGAGTACACCATTAATGATTTCAAATCAAATAAAATA					cohl_al2.seq
		GTGATCTTAAATAAGAGTACACCATAACTTGATTTCAAATCAAATAAAATA					a909_al2.seq
		AAAGCAACTAACATCGGAAGGATTGAAAAATCAACCTTTAAAAATTCTGC					Majority
		2010 2020 2030 2040 2050					
2001	2001	AAAGCAACTAACATCGGAAGGATTGAAAAATCAACCTTTAAAAATTCTGC					cohl_al2.seq
		AAAGCAACTAACATCGGAAGGATTGAAAAATCAACCTTTAAAAATTCTGC					a909_al2.seq
		TCCTGGTATTAATGGAATGAAACCATCATCAATACAAAAGATAAGGCAG					Majority
		2060 2070 2080 2090 2100					
2051	2051	TCCTGGTATTAATGGAATGAAACCATCATCAATACAAAAGATAAGGCAG					cohl_al2.seq
		TCCTGGTATTAATGGAATGAAACCATCATCAATACAAAAGATAAGGCAG					a909_al2.seq
		AAAGAATGGCGATTGTCAACCATTTTACGTGTATTGTGTCATAAAAAAATTC					Majority
		2110 2120 2130 2140 2150					
2101	2101	AAAGAATGGCGATTGTCAACCATTTTACGTGTATTGTGTCATAAAAAAATTC					cohl_al2.seq
		AAAGAATGGCGATTGTCAACCATTTTACGTGTATTGTGTCATAAAAAAATTC					a909_al2.seq
		CTCCAATTTAAATAAATTGAAAGAAGCTCCAAAGGTAAGCGTAGGTACGC					Majority
		2160 2170 2180 2190 2200					
2151	2151	CTCCAATTTAAATAAATTGAAAGAAGCTCCAAAGGTAAGCGTAGGTACGC					cohl_al2.seq
		CTCCAATTTAAATAAATTGAAAGAAGCTCCAAAGGTAAGCGTAGGTACGC					a909_al2.seq
		GAAAAAAACCTTTTCTCTTCTCCCATCCAGACTTTTACTGTCTGGTTGTGGAA					Majority
		2210 2220 2230 2240 2250					
2201	2201	GAAAAAAACCTTTTCTCTTCTCCCATCCAGACTTTTACTGTCTGGTTGTGGAA					cohl_al2.seq
		GAAAAAAACCTTTTCTCTTCTCCCATCCAGACTTTTACTGTCTGGTTGTGGAA					a909_al2.seq
		TCTCACCACATCAGCTTTTCGCTCGCGGACTGATGCTTCACAACCTGACAAA					Majority
		2260 2270 2280 2290 2300					
2251	2251	TCTCACCACATCAGCTTTTCGCTCGCGGACTGATGCTTCACAACCTGACAAA					cohl_al2.seq
		TCTCACCACATCAGCTTTTCGCTCGCGGACTGATGCTTCACAACCTGACAAA					a909_al2.seq
		TAAGTTGGAAGCGATTACCGCCGTCGGGAATTACACCCTGCCCTGAAGA					Majority
		2310 2320 2330 2340 2350					
2301	2301	TAAGTTGGAAGCGATTACCGCCGTCGGGAATTACACCCTGCCCTGAAGA					cohl_al2.seq
		TAAGTTGGAAGCGATTACCGCCGTCGGGAATTACACCCTGCCCTGAAGA					a909_al2.seq
		CACCTATAGCATAACAAAAAAACTTGC AATTGCAAGTTTTTTAATCACT					Majority
		2360 2370 2380 2390 2400					
2351	2351	CACCTATAGCATAACAAAAAAACTTGC AATTGCAAGTTTTTTAATCACT					cohl_al2.seq
		CACCTATAGCATAACAAAAAAACTTGC AATTGCAAGTTTTTTAATCACT					a909_al2.seq
		AATTAGTAGTAGATTGCTATAATATTAATTTTTTAACATCAATTAATTGACA					Majority
		2410 2420 2430 2440 2450					
2401	2401	AATTAGTAGTAGATTGCTATAATATTAATTTTTTAACATCAATTAATTGACA					cohl_al2.seq
		AATTAGTAGTAGATTGCTATAATATTAATTTTTTAACATCAATTAATTGACA					a909_al2.seq
		GGGCACTAATACTCTAGCTACTCCTGCCCTTTGTACAAAGTAAACAAGCTTA					Majority
		2460 2470 2480 2490 2500					
2451	2451	GGGCACTAATACTCTAGCTACTCCTGCCCTTTGTACAAAGTAAACAAGCTTA					cohl_al2.seq
		GGGCACTAATACTCTAGCTACTCCTGCCCTTTGTACAAAGTAAACAAGCTTA					a909_al2.seq
		AGTCCCAATCATTGCTCTGATGTGGCAGTTTTATAAACTTTTTCAATCGCT					Majority
		2510 2520 2530 2540 2550					
2501	2501	AGTCCCAATCATTGCTCTGATGTGGCAGTTTTATAAACTTTTTCAATCGCT					cohl_al2.seq
		AGTCCCAATCATTGCTCTGATGTGGCAGTTTTATAAACTTTTTCAATCGCT					a909_al2.seq
		GTTGGTTCAATAAATTTCTCTATTACTGATTTTGTAGTGATAGATTTCGCC					Majority
		2560 2570 2580 2590 2600					
2551	2551	GTTGGTTCAATAAATTTCTCTATTACTGATTTTGTAGTGATAGATTTCGCC					cohl_al2.seq
		GTTGGTTCAATAAATTTCTCTATTACTGATTTTGTAGTGATAGATTTCGCC					a909_al2.seq

FIGURE 21C

FIGURE 21D

115/487

		GACATTAGCTTCATAAACCTTGAGCTGTTTTAGTCTGAATAAATAGATAAAAT	Majority		
	3260	3270	3280	3290	3300
3251		GACATTAGCTTCATAAACCTTGAGCTGTTTTAGTCTGAATAAATAGATAAAAT	cohl_a12.seq		
3251		GACATTAGCTTCATAAACCTTGAGCTGTTTTAGTCTGAATAAATAGATAAAAT	a909_a12.seq		
		CCCTTGAGGGAAGATTGTTTCGCAACAATACCTTCAGCCGGTAAATTATCAA	Majority		
	3310	3320	3330	3340	3350
3301		CCCTTGAGGGAAGATTGTTTCGCAACAATACCTTCAGCCGGTAAATTATCAA	cohl_a12.seq		
3301		CCCTTGAGGGAAGATTGTTTCGCAACAATACCTTCAGCCGGTAAATTATCAA	a909_a12.seq		
		ACGTTTGATAAAGGTTGAGTTTTATGAACAGCTTTTGTTAGTAGATTGACG	Majority		
	3360	3370	3380	3390	3400
3351		ACGTTTGATAAAGGTTGAGTTTTATGAACAGCTTTTGTTAGTAGATTGACG	cohl_a12.seq		
3351		ACGTTTGATAAAGGTTGAGTTTTATGAACAGCTTTTGTTAGTAGATTGACG	a909_a12.seq		
		TATTTGGCTTGCTTACTATCAAGCTTTACTTGTGTTAGATCATCGTCTTT	Majority		
	3410	3420	3430	3440	3450
3401		TATTTGGCTTGCTTACTATCAAGCTTTACTTGTGTTAGATCATCGTCTTT	cohl_a12.seq		
3401		TATTTGGCTTGCTTACTATCAAGCTTTACTTGTGTTAGATCATCGTCTTT	a909_a12.seq		
		TATTCCAATACCTTGAAATGGGGTAGTTAGAGCTAAAAACTTGGTTACCAT	Majority		
	3460	3470	3480	3490	3500
3451		TATTCCAATACCTTGAAATGGGGTAGTTAGAGCTAAAAACTTGGTTACCAT	cohl_a12.seq		
3451		TATTCCAATACCTTGAAATGGGGTAGTTAGAGCTAAAAACTTGGTTACCAT	a909_a12.seq		
		GAACATCTTTAGCTTGTGCTACTTGGTAAACAAGTAAATTACCGCCAGCG	Majority		
	3510	3520	3530	3540	3550
3501		GAACATCTTTAGCTTGTGCTACTTGGTAAACAAGTAAATTACCGCCAGCG	cohl_a12.seq		
3501		GAACATCTTTAGCTTGTGCTACTTGGTAAACAAGTAAATTACCGCCAGCG	a909_a12.seq		
		ATACCTTGATTATTATACTTATTTTGTATAGTAATAGAACCCTTTTCAT	Majority		
	3560	3570	3580	3590	3600
3551		ATACCTTGATTATTATACTTATTTTGTATAGTAATAGAACCCTTTTCAT	cohl_a12.seq		
3551		ATACCTTGATTATTATACTTATTTTGTATAGTAATAGAACCCTTTTCAT	a909_a12.seq		
		CTGATCATTGGTATCAGCAGACACAAGTTGAGTACTTAGACTAAATAATA	Majority		
	3610	3620	3630	3640	3650
3601		CTGATCATTGGTATCAGCAGACACAAGTTGAGTACTTAGACTAAATAATA	cohl_a12.seq		
3601		CTGATCATTGGTATCAGCAGACACAAGTTGAGTACTTAGACTAAATAATA	a909_a12.seq		
		AGAGAAGAGTTATCTTTAGGATCTTTTTTATAAATCATTGTTCTCTTCCTT	Majority		
	3660	3670	3680	3690	3700
3651		AGAGAAGAGTTATCTTTAGGATCTTTTTTATAAATCATTGTTCTCTTCCTT	cohl_a12.seq		
3651		AGAGAAGAGTTATCTTTAGGATCTTTTTTATAAATCATTGTTCTCTTCCTT	a909_a12.seq		
		TCTCATTGCTTGTTTTAAATTTTCTTACGTTGACGTCTCTCTCCTAGTTA	Majority		
	3710	3720	3730	3740	3750
3701		TCTCATTGCTTGTTTTAAATTTTCTTACGTTGACGTCTCTCTCCTAGTTA	cohl_a12.seq		
3701		TCTCATTGCTTGTTTTAAATTTTCTTACGTTGACGTCTCTCTCCTAGTTA	a909_a12.seq		
		CTTCTAAAGAGATTAAAAAGTAAAAATCAAAGTAAGGAAAAATAGCGATAAAAT	Majority		
	3760	3770	3780	3790	3800
3751		CTTCTAAAGAGATTAAAAAGTAAAAATCAAAGTAAGGAAAAATAGCGATAAAAT	cohl_a12.seq		
3751		CTTCTAAAGAGATTAAAAAGTAAAAATCAAAGTAAGGAAAAATAGCGATAAAAT	a909_a12.seq		
		GGTGCGATATAAATAGGCTCTATTTTGATTGCGCTCTGCTACTACCAAAGC	Majority		
	3810	3820	3830	3840	3850
3801		GGTGCGATATAAATAGGCTCTATTTTGATTGCGCTCTGCTACTACCAAAGC	cohl_a12.seq		
3801		GGTGCGATATAAATAGGCTCTATTTTGATTGCGCTCTGCTACTACCAAAGC	a909_a12.seq		
		GTTACCATTATCGTTTTGGTACACGATGTCCTCTCACTAGTAACCGATGGG	Majority		
	3860	3870	3880	3890	3900
3851		GTTACCATTATCGTTTTGGTACACGATGTCCTCTCACTAGTAACCGATGGG	cohl_a12.seq		
3851		GTTACCATTATCGTTTTGGTACACGATGTCCTCTCACTAGTAACCGATGGG	a909_a12.seq		

FIGURE 21E

116/487

```

TATTAACGCGCATATGGGTGTACACGTCACCAAAGTTTGGTAGTCTTTACCT Majority
3910 3920 3930 3940 3950
3901 TATTAACGCGCATATGGGTGTACACGTCACCAAAGTTTGGTAGTCTTTACCT coh1_al2.seq
3901 TATTAACGCGCATATGGGTGTACACGTCACCAAAGTTTGGTAGTCTTTACCT a909_al2.seq

TTAACAATTTGTAAATCCCTCAAATCATCCGGTTTAACTGTTCTGATTTG Majority
3960 3970 3980 3990 4000
3951 TTAACAATTTGTAAATCCCTCAAATCATCCGGTTTAACTGTTCTGATTTG coh1_al2.seq
3951 TTAACAATTTGTAAATCCCTCAAATCATCCGGTTTAACTGTTCTGATTTG a909_al2.seq

ATCCACTTGATAAGTATATGTTTCATTTAAGATACTGACTGTCCAGTGGT Majority
4010 4020 4030 4040 4050
4001 ATCCACTTGATAAGTATATGTTTCATTTAAGATACTGACTGTCCAGTGGT coh1_al2.seq
4001 ATCCACTTGATAAGTATATGTTTCATTTAAGATACTGACTGTCCAGTGGT a909_al2.seq

CTCCAGCTTTTAACTTATCCAAATCAGAAAAAAGCCTTGAAGAGGGGTAAA Majority
4060 4070 4080 4090 4100
4051 CTCCAGCTTTTAACTTATCCAAATCAGAAAAAAGCCTTGAAGAGGGGTAAA coh1_al2.seq
4051 CTCCAGCTTTTAACTTATCCAAATCAGAAAAAAGCCTTGAAGAGGGGTAAA a909_al2.seq

CCTCTATGTCCTGATAAAATAGAATGAGTTGAGTCTCCTCCAATTGGAAAG Majority
4110 4120 4130 4140 4150
4101 CCTCTATGTCCTGATAAAATAGAATGAGTTGAGTCTCCTCCAATTGGAAAG coh1_al2.seq
4101 CCTCTATGTCCTGATAAAATAGAATGAGTTGAGTCTCCTCCAATTGGAAAG a909_al2.seq

ACTACTTCCTTCTAAATGACCAATAGAAGTTTGAAGCACTTTTTCACTTG Majority
4160 4170 4180 4190 4200
4151 ACTACTTCCTTCTAAATGACCAATAGAAGTTTGAAGCACTTTTTCACTTG coh1_al2.seq
4151 ACTACTTCCTTCTAAATGACCAATAGAAGTTTGAAGCACTTTTTCACTTG a909_al2.seq

TACCATGATAAAGTGGTAATTTTATGTTTATCTTTGCAATTGAAATATAA Majority
4210 4220 4230 4240 4250
4201 TACCATGATAAAGTGGTAATTTTATGTTTATCTTTGCAATTGAAATATAA coh1_al2.seq
4201 TACCATGATAAAGTGGTAATTTTATGTTTATCTTTGCAATTGAAATATAA a909_al2.seq

CCCATATTAACCGTTTTATCGATAGCCAGTTGTGAATTATAATCCAAACG Majority
4260 4270 4280 4290 4300
4251 CCCATATTAACCGTTTTATCGATAGCCAGTTGTGAATTATAATCCAAACG coh1_al2.seq
4251 CCCATATTAACCGTTTTATCGATAGCCAGTTGTGAATTATAATCCAAACG a909_al2.seq

CTCTEGGTTAGTCATGTGCCACTTTCATTCTGAAGTTTTAAATTGCTTAT Majority
4310 4320 4330 4340 4350
4301 CTCTEGGTTAGTCATGTGCCACTTTCATTCTGAAGTTTTAAATTGCTTAT coh1_al2.seq
4301 CTCTEGGTTAGTCATGTGCCACTTTCATTCTGAAGTTTTAAATTGCTTAT a909_al2.seq

TATATTCTTTGGCTCGGTTAATAATTTTTTTTATAGTCGTTTTTCATCCATA Majority
4360 4370 4380 4390 4400
4351 TATATTCTTTGGCTCGGTTAATAATTTTTTTTATAGTCGTTTTTCATCCATA coh1_al2.seq
4351 TATATTCTTTGGCTCGGTTAATAATTTTTTTTATAGTCGTTTTTCATCCATA a909_al2.seq

TGGCGTTACGCGGCTCTTGGTAATCGATAATCGCTCGAGATTGGTGAAATGA Majority
4410 4420 4430 4440 4450
4401 TGGCGTTACGCGGCTCTTGGTAATCGATAATCGCTCGAGATTGGTGAAATGA coh1_al2.seq
4401 TGGCGTTACGCGGCTCTTGGTAATCGATAATCGCTCGAGATTGGTGAAATGA a909_al2.seq

ATTCCAATAATTAGCAAGTGAAGGATAAGCCATTAAAGCCTACCCCCACTG Majority
4460 4470 4480 4490 4500
4451 ATTCCAATAATTAGCAAGTGAAGGATAAGCCATTAAAGCCTACCCCCACTG coh1_al2.seq
4451 ATTCCAATAATTAGCAAGTGAAGGATAAGCCATTAAAGCCTACCCCCACTG a909_al2.seq

CAATTATAGTGACAAGCAAAATGGATACTAAATGTTGCTTATTTTTTTTC Majority
4510 4520 4530 4540 4550
4501 CAATTATAGTGACAAGCAAAATGGATACTAAATGTTGCTTATTTTTTTTC coh1_al2.seq
4501 CAATTATAGTGACAAGCAAAATGGATACTAAATGTTGCTTATTTTTTTTC a909_al2.seq

```

FIGURE 21F

117/487

```

ATATATTTTAAAGCTGTAACGCTTCTAGCCCCATCTTATTAAGAACGTA Majority
4560 4570 4580 4590 4600
4551 ATATATTTTAAATCTGTACCACCTTTGCTAGCCCCATCTTATTAAGAACGTA cohl_al2.seq
4551 ATATATTTTAAATCTGTACCACCTTTGCTAGCCCCATCTTATTAAGAACGTA a909_al2.seq

AACGACGACGAGCAACAAGCAGGATACCTGCTCCTATTACTAAAATTGCA Majority
4610 4620 4630 4640 4650
4601 AACGACGACGAGCAACAAGCAGGATACCTGCTCCTATTACTAAAATTGCA cohl_al2.seq
4601 AACGACGACGAGCAACAAGCAGGATACCTGCTCCTATTACTAAAATTGCA a909_al2.seq

CCTATAATGTAGAAAATTGTTGTACCAATACCACCTGTTGAAGGCAACTC Majority
4660 4670 4680 4690 4700
4651 CCTATAATGTAGAAAATTGTTGTACCAATACCACCTGTTGAAGGCAACTC cohl_al2.seq
4651 CCTATAATGTAGAAAATTGTTGTACCAATACCACCTGTTGAAGGCAACTC a909_al2.seq

AGTACCTTTGTTATTTTCAACAGTTGGGTAACTAAAAGGTTATCTGAAT Majority
4710 4720 4730 4740 4750
4701 AGTACCTTTGTTATTTTCAACAGTTGGGTAACTAAAAGGTTATCTGAAT cohl_al2.seq
4701 AGTACCTTTGTTATTTTCAACAGTTGGGTAACTAAAAGGTTATCTGAAT a909_al2.seq

TAGTCGTATCAGTGGCTCCATCTCCTAAAATAACCTTCTGAGAGTTATCT Majority
4760 4770 4780 4790 4800
4751 TAGTCGTATCAGTGGCTCCATCTCCTAAAATAACCTTCTGAGAGTTATCT cohl_al2.seq
4751 TAGTCGTATCAGTGGCTCCATCTCCTAAAATAACCTTCTGAGAGTTATCT a909_al2.seq

AACAAAATTGTAACCTAAGGGAGCCTTTTTCTCAACTAGATAGTATGTACC Majority
4810 4820 4830 4840 4850
4801 AACAAAATTGTAACCTAAGGGAGCCTTTTTCTCAACTAGATAGTATGTACC cohl_al2.seq
4801 AACAAAATTGTAACCTAAGGGAGCCTTTTTCTCAACTAGATAGTATGTACC a909_al2.seq

TTCTTTCAAGCCTGTAATGGTAATTATACCATCTGCTCCTGTTGTATATT Majority
4860 4870 4880 4890 4900
4851 TTCTTTCAAGCCTGTAATGGTAATTATACCATCTGCTCCTGTTGTATATT cohl_al2.seq
4851 TTCTTTCAAGCCTGTAATGGTAATTATACCATCTGCTCCTGTTGTATATT a909_al2.seq

CTGTTGCCATTAGCTTCTGTGCCCCATTCAACGTTATTTGTATCGTTAAAG Majority
4910 4920 4930 4940 4950
4901 CTGTTGCCATTAGCTTCTGTGCCCCATTCAACGTTATTTGTATCGTTAAAG cohl_al2.seq
4901 CTGTTGCCATTAGCTTCTGTGCCCCATTCAACGTTATTTGTATCGTTAAAG a909_al2.seq

TTTAGAAATTGACCCGTAGCATTCTTTTAAACAAATATAGCACCTTGTAAG Majority
4960 4970 4980 4990 5000
4951 TTTAGAAATTGACCCGTAGCATTCTTTTAAACAAATATAGCACCTTGTAAG cohl_al2.seq
4951 TTTAGAAATTGACCCGTAGCATTCTTTTAAACAAATATAGCACCTTGTAAG a909_al2.seq

TGAAGCTTTTGTGGAACCATCAATTTTTTTTATAGTAATTTGACCATCCC Majority
5010 5020 5030 5040 5050
5001 TGAAGCTTTTGTGGAACCATCAATTTTTTTTATAGTAATTTGACCATCCC cohl_al2.seq
5001 TGAAGCTTTTGTGGAACCATCAATTTTTTTTATAGTAATTTGACCATCCC a909_al2.seq

TCACTGTTACTTTTGAACCTGGGTCATCATTGCTAGTATTGGGGTTGATG Majority
5060 5070 5080 5090 5100
5051 TCACTGTTACTTTTGAACCTGGGTCATCATTGCTAGTATTGGGGTTGATG cohl_al2.seq
5051 TCACTGTTACTTTTGAACCTGGGTCATCATTGCTAGTATTGGGGTTGATG a909_al2.seq

GTGCGCAATGTTTGTATTTTCTGCTAAATCAGCTGAACCTGCTTTAGCTCC Majority
5110 5120 5130 5140 5150
5101 GTGCGCAATGTTTGTATTTTCTGCTAAATCAGCTGAACCTGCTTTAGCTCC cohl_al2.seq
5101 GTGCGCAATGTTTGTATTTTCTGCTAAATCAGCTGAACCTGCTTTAGCTCC a909_al2.seq

ACTCTTTAAATACTCCTGTATAAGTGACTGTGATTGTATTTATTCCTTAT Majority
5160 5170 5180 5190 5200
5151 ACTCTTTAAATACTCCTGTATAAGTGACTGTGATTGTATTTATTCCTTAT cohl_al2.seq
5151 ACTCTTTAAATACTCCTGTATAAGTGACTGTGATTGTATTTATTCCTTAT a909_al2.seq

```

FIGURE 21G

118/487

	AAAAAAGTCATCATTAGCTCCATTTTGGAGTATTTCCGGTTGGAGTATTG Majority	
	5210 5220 5230 5240 5250	
5201	AAAAAAGTCATCATTAGCTCCATTTTGGAGTATTTCCGGTTGGAGTATTG coh1_a12.seq	
5201	AAAAAAGTCATCATTAGCTCCATTTTGGAGTATTTCCGGTTGGAGTATTG a909_a12.seq	
	GTAGCTGCCACGGAATAGTAATCGTGAAATTATTATTTTCTCTAACA G Majority	
	5260 5270 5280 5290 5300	
5251	GTAGCTGCCACGGAATAGTAATCGTGAAATTATTATTTTCTCTAACA G coh1_a12.seq	
5251	GTAGCTGCCACGGAATAGTAATCGTGAAATTATTATTTTCTCTAACA G a909_a12.seq	
	GTTATACTTCCCAGTTGCTTTTTCCGAACCTTGAGTTAGAGTTGTAATA T Majority	
	5310 5320 5330 5340 5350	
5301	GTTATACTTCCCAGTTGCTTTTTCCGAACCTTGAGTTAGAGTTGTAATA T coh1_a12.seq	
5301	GTTATACTTCCCAGTTGCTTTTTCCGAACCTTGAGTTAGAGTTGTAATA T a909_a12.seq	
	TCCCTGATCCATCAGTAATAGTTACTTCATAAGATCCTTCGTTCAAA TCA Majority	
	5360 5370 5380 5390 5400	
5351	TCCCTGATCCATCAGTAATAGTTACTTCATAAGATCCTTCGTTCAAA TCA coh1_a12.seq	
5351	TCCCTGATCCATCAGTAATAGTTACTTCATAAGATCCTTCGTTCAAA TCA a909_a12.seq	
	ACTACAGAAGCAGATGGCATAGTATCCTTTATAACATATTGATACACTTT Majority	
	5410 5420 5430 5440 5450	
5401	ACTACAGAAGCAGATGGCATAGTATCCTTTATAACATATTGATACACTTT coh1_a12.seq	
5401	ACTACAGAAGCAGATGGCATAGTATCCTTTATAACATATTGATACACTTT a909_a12.seq	
	TTCTGTACCATGATAATTGACTGCAATTCTTATAAGTAATAGTATATTTGA Majority	
	5460 5470 5480 5490 5500	
5451	TTCTGTACCATGATAATTGACTGCAATTCTTATAAGTAATAGTATATTTGA coh1_a12.seq	
5451	TTCTGTACCATGATAATTGACTGCAATTCTTATAAGTAATAGTATATTTGA a909_a12.seq	
	CTGTATCACCAACCGAGTACGTTTTTTTGATCTACAGTTTTTCCACCACCA Majority	
	5510 5520 5530 5540 5550	
5501	CTGTATCACCAACCGAGTACGTTTTTTTGATCTACAGTTTTTCCACCACCA coh1_a12.seq	
5501	CTGTATCACCAACCGAGTACGTTTTTTTGATCTACAGTTTTTCCACCACCA a909_a12.seq	
	TCTCCCCATGTCGCATCAGTATTCTTTTCATGAATAGTAGCATTGGA G T Majority	
	5560 5570 5580 5590 5600	
5551	TCTCCCCATGTCGCATCAGTATTCTTTTCATGAATAGTAGCATTGGA G T coh1_a12.seq	
5551	TCTCCCCATGTCGCATCAGTATTCTTTTCATGAATAGTAGCATTGGA G T a909_a12.seq	
	TACAGATGTAACCATAATTACAGCTCCATTATTAACAGTGCTAGAAACA T Majority	
	5610 5620 5630 5640 5650	
5601	TACAGATGTAACCATAATTACAGCTCCATTATTAACAGTGCTAGAAACA T coh1_a12.seq	
5601	TACAGATGTAACCATAATTACAGCTCCATTATTAACAGTGCTAGAAACA T a909_a12.seq	
	AATAATATCCATATTGGGAAACATTAATAACCTCAGTACCATCATTATT T Majority	
	5660 5670 5680 5690 5700	
5651	AATAATATCCATATTGGGAAACATTAATAACCTCAGTACCATCATTATT T coh1_a12.seq	
5651	AATAATATCCATATTGGGAAACATTAATAACCTCAGTACCATCATTATT T a909_a12.seq	
	GACTCAGTAACAGTGGAAACTGCGTGTAGTATTAGCTGATATAGATTTAG C Majority	
	5710 5720 5730 5740 5750	
5701	GACTCAGTAACAGTGGAAACTGCGTGTAGTATTAGCTGATATAGATTTAG C coh1_a12.seq	
5701	GACTCAGTAACAGTGGAAACTGCGTGTAGTATTAGCTGATATAGATTTAG C a909_a12.seq	
	CCATGTCGCAATCTCATTGCTGACGCAGTATCTTTTTTGTACATAT G Majority	
	5760 5770 5780 5790 5800	
5751	CCATGTCGCAATCTCATTGCTGACGCAGTATCTTTTTTGTACATAT G coh1_a12.seq	
5751	CCATGTCGCAATCTCATTGCTGACGCAGTATCTTTTTTGTACATAT G a909_a12.seq	
	TTCTCCCTCCATTAGTAGTTGTCGTAAAAAGAGAAATTAATAATCAGTTGA A Majority	
	5810 5820 5830 5840 5850	
5801	TTCTCCCTCCATTAGTAGTTGTCGTAAAAAGAGAAATTAATAATCAGTTGA A coh1_a12.seq	
5801	TTCTCCCTCCATTAGTAGTTGTCGTAAAAAGAGAAATTAATAATCAGTTGA A a909_a12.seq	

FIGURE 21H

119/487

	G C T T T A T A C T C A G C T T C T T T A C C T T G A G G A A T T A A A T A A G A A G C T C C A T C	Majority
	5860 5870 5880 5890 5900	
5851	G C T T T A T A C T C A G C T T C T T T A C C T T G A G G A A T T A A A T A A G A A G C T C C A T C	cohl_a12.seq
5851	G C T T T A T A C T C A G C T T C T T T A C C T T G A G G A A T T A A A T A A G A A G C T C C A T C	a909_a12.seq
	T T T A T T C G A A T C A G A T A C A T T T G C A T T A T C T A T T T C T G C A T C A A A A A C T T	Majority
	5910 5920 5930 5940 5950	
5901	T T T A T T C G A A T C A G A T A C A T T T G C A T T A T C T A T T T C T G C A T C A A A A A C T T	cohl_a12.seq
5901	T T T A T T C G A A T C A G A T A C A T T T G C A T T A T C T A T T T C T G C A T C A A A A A C T T	a909_a12.seq
	T G T A T G C T T T A T A G G T T G C G C C T T T T T G A G T A T C T T G A A C T G T A A T T G T C	Majority
	5960 5970 5980 5990 6000	
5951	T A T A T G C T T T A T A G G T T G C G C C T T T T T G A G T A T C T T G A A C T G T A A T T G T C	cohl_a12.seq
5951	T G T A T G C T T T A T A G G T T G C G C C T T T T T G A G T A T C T T G A A C T G T A A T T G T C	a909_a12.seq
	C C T G T C T C A G C G G C A A A A G C T A T C G G C G T A A C T G G T G A T A C A G C C A T A C C	Majority
	6010 6020 6030 6040 6050	
6001	C C T G T C T C A G C G G C A A A A G C T A T C G G C G T A A C T G G T G A T A C A G C C A T A C C	cohl_a12.seq
6001	C C T G T C T C A G C G G C A A A A G C T A T C G G C G T A A C T G G T G A T A C A G C C A T A C C	a909_a12.seq
	A A A T G C T A A A C T C G C C A C T A A C A G C G A T T G A A T C A T T T T C T T T T T C A T T G	Majority
	6060 6070 6080 6090 6100	
6051	A A A T G C T A A A C T C G C C A C T A A C A G C G A T T G A A T C A T T T T C T T T T T C A T T G	cohl_a12.seq
6051	A A A T G C T A A A C T C G C C A C T A A C A G C G A T T G A A T C A T T T T C T T T T T C A T T G	a909_a12.seq
	A A A T C T T T T C C T A A A A T C A T A T T G A T G A A T G A T T A A T T C A T A T T T T T T	Majority
	6110 6120 6130 6140 6150	
6101	A A A T C T T T T C C T A A A A T C A T A T T G A T G A A T G A T T A A T T C A T A T T T T T T	cohl_a12.seq
6101	A A A T C T T T T C C T A A A A T C A T A T T G A T G A A T G A T T A A T T C A T A T T T T T T	a909_a12.seq
	T C G A T A G T A T A A T A T T A A T C C T G A T G G T A G A G C T A A A G C T A A A C C A A C T A	Majority
	6160 6170 6180 6190 6200	
6151	T C G A T A G T A T A A T A T T A A T C C T G A T G G T A G A G C T A A A G C T A A A C C A A C T A	cohl_a12.seq
6151	T C G A T A G T A T A A T A T T A A T C C T G A T G G T A G A G C T A A A G C T A A A C C A A C T A	a909_a12.seq
	G C A T A T A A A T G T G T G T T C C A A T A C C T C C A G T A C T A G G C A A T T C T G T T C C T	Majority
	6210 6220 6230 6240 6250	
6201	G C A T A T A A A T G T G T G T T C C A A T A C C T C C A G T A C T A G G C A A T T C T G T T C C T	cohl_a12.seq
6201	G C A T A T A A A T G T G T G T T C C A A T A C C T C C A G T A C T A G G C A A T T C T G T T C C T	a909_a12.seq
	T T A C T G T T A G T A A T T T T A A A A G T A T A T A C T G T A C T T C C A T C T A C T A A A T T	Majority
	6260 6270 6280 6290 6300	
6251	T T A C T G T T A G T A A T T T T A A A A G T A T A T A C T G T A C T T C C A T C T A C T A A A T T	cohl_a12.seq
6251	T T A C T G T T A G T A A T T T T A A A A G T A T A T A C T G T A C T T C C A T C T A C T A A A T T	a909_a12.seq
	C T C T T T T A T T G G T G T C G C A T T A T T A C C A T T T T G T T C A A A G G T A A C T C C C G	Majority
	6310 6320 6330 6340 6350	
6301	C T C T T T T A T T G G T G T C G C A T T A T T A C C A T T T T G T T C A A A G G T A A C T C C C G	cohl_a12.seq
6301	C T C T T T T A T T G G T G T C G C A T T A T T A C C A T T T T G T T C A A A G G T A A C T C C C G	a909_a12.seq
	T A G A A A T C A C T A A T A C T G A T A T A T C A T T T T A G C T A G T A G G T A C C C T G G A	Majority
	6360 6370 6380 6390 6400	
6351	T A G A A A T C A C T A A T A C T G A T A T A T C A T T T T A G C T A G T A G G T A C C C T G G A	cohl_a12.seq
6351	T A G A A A T C A C T A A T A C T G A T A T A T C A T T T T A G C T A G T A G G T A C C C T G G A	a909_a12.seq
	G G G G C C T T T G T C T C T G T T A G G T A G T A T T T T C C T A C T G G C A A A C T G A G G T A	Majority
	6410 6420 6430 6440 6450	
6401	G G G G C C T T T G T C T C T G T T A G G T A G T A T T T T C C T A C T G G C A A A C T G A G G T A	cohl_a12.seq
6401	G G G G C C T T T G T C T C T G T T A G G T A G T A T T T T C C T A C T G G C A A A C T G A G G T A	a909_a12.seq
	G T T A T T A G C A T C C A C T A A T A A C A A G C C T T T A T C G T T T G T C A C C A G C C C T G	Majority
	6460 6470 6480 6490 6500	
6451	G T T A T T A G C A T C C A C T A A T A A C A A G C C T T T A T C G T T T G T C A C C A G C C C T G	cohl_a12.seq
6451	G T T A T T A G C A T C C A C T A A T A A C A A G C C T T T A T C G T T T G T C A C C A G C C C T G	a909_a12.seq

FIGURE 21I

120/487

```

A A T A C A A T T G A T C T G A A G C T T T A T T C C A T T A G C A T C T G A T T C A T A A A T A Majority
6510 6520 6530 6540 6550
6501 A A T A C A T A G G A T G T G A A G C T T T A T T C C C A T T A G C A T C T G A T T C A T A A A T A coh1_a12.seq
6501 A A T A C A T A G G A T G T G A A G C T T T A T T C C C A T T A G C A T C T G A T T C A T A A A T A a909_a12.seq

T C A A A A A A C T G C A C C T G C T A A A A A A T T A T T A T C A T T T T C G A C A T T A A C T T T Majority
6560 6570 6580 6590 6600
6551 T C A A A A A A C T G C A C C T G C T A A A A A A T T A T T A T C A T T T T C G A C A T T A A C T T T coh1_a12.seq
6551 T C A A A A A A C T G C A C C T G C T A A A A A A T T A T T A T C A T T T T C G A C A T T A A C T T T a909_a12.seq

C T G T A G T C G T A C T T T T T G C T T G A T A C G T G T A T T G C T A A A G C T A A T A T C T A Majority
6610 6620 6630 6640 6650
6601 C T G T A G T C G T A C T T T T T G C T T G A T A C G T G T A T T G G T A A A G C T A A T A T C T A coh1_a12.seq
6601 C T G T A G T C G T A C T T T T T G C T T G A T A C G T G T A T T G G T A A A G C T A A T A T C T A a909_a12.seq

C C T C T C C T G A A A C T G T C A G G G A T T G T A A G C C G G T A G C A T C A T A A G T T T T A Majority
6660 6670 6680 6690 6700
6651 C C T C T C C T G A A A C T G T C A G G G A T T G T A A G C C G G T A G C A T C A T A A G T T T T A coh1_a12.seq
6651 C C T C T C C T G A A A C T G T A G G G A T T G T A A G C C G G T A G C A T C A T A A G T T T T A a909_a12.seq

T C A G C T T C A C C A G T T G C T A G A T T T T T T C T G T A A T T G A C T C A G A T A C T T T Majority
6710 6720 6730 6740 6750
6701 T C A G C T T C A C C A G T T G C T A G A T T T T T T C T G T A A T T G A C T C A G A T A C T T T coh1_a12.seq
6701 T C A G C T T C A C C A G T T G C T A G A T T T T T T C T G T A A T T G A C T C A G A T A C T T T a909_a12.seq

A A A T T C A T C G T A G G C T T G T T C A T C T A T T G A T A T A G A A G T T C C A T A A G G T A Majority
6760 6770 6780 6790 6800
6751 A A A T T C A T C G T A G G C T T G T T C A T C T A T T G A T A T A G A A G T T C C A T A A G G T A coh1_a12.seq
6751 A A A T T C A T C G T A G G C T T G T T C A T C T A T T G A T A T A G A A G T T C C A T A A G G T A a909_a12.seq

C T T T A A A T T C C T T A G T C T G A C C A T C T C T C A G C G G A A A A T T C T C T T G T T G C Majority
6810 6820 6830 6840 6850
6801 C T T T A A A T T C C T T A G T C T G A C C A T C T C T C A G C G G A A A A T T C T C T T G T T G C coh1_a12.seq
6801 C T T T A A A T T C C T T A G T C T G A C C A T C T C T C A G C G G A A A A T T C T C T T G T T G C a909_a12.seq

A A C G T T T C A C T T G G A T T A A A C A A G A A G T C T T T C G T C T T A T C T T C A T C T A G Majority
6860 6870 6880 6890 6900
6851 A A C G T T T C A C T T G G A T T A A A C A A G A A G T C T T T C G T C T T A T C T T C A T C T A G coh1_a12.seq
6851 A A C G T T T C A C T T G G A T T A A A C A A G A A G T C T T T C G T C T T A T C T T C A T C T A G a909_a12.seq

T C C A A C G A C A G T T T T A C T T A C T C T G A C G G T G T A T T C T T T A G G T T G C C A A A Majority
6910 6920 6930 6940 6950
6901 T C C A A C G A C A G T T T T A C T T A C T C T G A C G G T G T A T T C T T T A G G T T G C C A A A coh1_a12.seq
6901 T C C A A C G A C A G T T T T A C T T A C T C T G A C G G T G T A T T C T T T A G G T T G C C A A A a909_a12.seq

C A G C A T A T A A G G T A T T T G T T G C A T C A G G G T T G T T A T C A A T A C C T A T T G A T Majority
6960 6970 6980 6990 7000
6951 C A G C A T A T A A G G T A T T T G T T G C A T C A G G G T T G T T A T C A A T A C C T A T T G A T coh1_a12.seq
6951 C A G C A T A T A A G G T A T T T G T T G C A T C A G G G T T G T T A T C A A T A C C T A T T G A T a909_a12.seq

T G A C C T G C T G T A A A T T C C A C A C G T C C T G T A T C A G C T A A A T C C T T A T C A T G Majority
7010 7020 7030 7040 7050
7001 T G A C C T G C T G T A A A T T C C A C A C G T C C T G T A T C A G C T A A A T C C T T A T C A T G coh1_a12.seq
7001 T G A C C T G C T G T A A A T T C C A C A C G T C C T G T A T C A G C T A A A T C C T T A T C A T G a909_a12.seq

A T G C C A A C C A A T A A G G T T G T A A C C T G T C C T T G T A A A G T A T T G G T T T T C A G Majority
7060 7070 7080 7090 7100
7051 A T G C C A A C C A A T A A G G T T G T A A C C T G T C C T T G T A A A G T A T T G G T T T T C A G coh1_a12.seq
7051 A T G C C A A C C A A T A A G G T T G T A A C C T G T C C T T G T A A A G T A T T G G T T T T C A G a909_a12.seq

G A A T T G T A G T T G T G C T A T T C A A C T C C A T A C G C G G T G T C T C T A C T T G T G T T Majority
7110 7120 7130 7140 7150
7101 G A A T T G T A G T T G T G C T A T T C A A C T C C A T A C G C G G T G T C T C T A C T T G T G T T coh1_a12.seq
7101 G A A T T G T A G T T G T G C T A T T C A A C T C C A T A C G C G G T G T C T C T A C T T G T G T T a909_a12.seq

```

FIGURE 21J